# COMPARING THE EFFICACY OF TASK SPECIFIC TRAINING AND CONVENTIONAL PHYSIOTHERAPEUTIC REHABILITATION ON MOTOR AND FUNCTIONAL ACTIVITIES OF UPPER LIMB IN POST STROKE PATIENTS

*Dissertation submitted in*

*the Partial fulfillment*

*for the degree of*

**MASTER OF PHYSIOTHERAPY**

**(Neurology)**

**The Tamil Nadu Dr. M.G.R. Medical University**

*Chennai*

***May 2018***

**PSG COLLEGE OF PHYSIOTHERAPY**

***Coimbatore***

# PSG COLLEGE OF PHYSIOTHERAPY

## Coimbatore

## CERTIFICATE

This is to certify that the research work entitled **"COMPARING THE EFFICACY OF TASK SPECIFIC TRAINING AND CONVENTIONAL PHYSIOTHERAPEUTIC REHABILITATION ON MOTOR AND FUNCTIONAL ACTIVITIES OF UPPER LIMB IN POST STROKE PATIENTS"** was carried out by **Reg. No. 271620244,** of P.S.G. College of Physiotherapy, towards the partial fulfillment for the degree of **MASTER OF PHYSIOTHERAPY (Physiotherapy in Neurology),** affiliated to The Tamil Nadu Dr. M.G.R. Medical University, Chennai.

**Internal Examiner** **External Examiner**

**Date of Evaluation**:

# PSG COLLEGE OF PHYSIOTHERAPY

**Coimbatore**

## CERTIFICATE

This is to certify that the dissertation work entitled **"COMPARING THE EFFICACY OF TASK SPECIFIC TRAINING AND CONVENTIONAL PHYSIOTHERAPEUTIC REHABILITATION ON MOTOR AND FUNCTIONAL ACTIVITIES OF UPPER LIMB IN POST STROKE PATIENTS"** was carried out by **THOMAS RICHARD. K, Reg. No. 271620244** of P.S.G. College of Physiotherapy, affiliated to The Tamil Nadu Dr. M.G.R. Medical University, Chennai.

**Prof. R.MAHESH, MPT.,**
Principal,
P.S.G. College of Physiotherapy,
Coimbatore - 641 004.

Place: Coimbatore

Date:

# PSG COLLEGE OF PHYSIOTHERAPY

## Coimbatore

## CERTIFICATE

This is to certify that the research work entitled **"COMPARING THE EFFICACY OF TASK SPECIFIC TRAINING AND CONVENTIONAL PHYSIOTHERAPEUTIC REHABILITATION ON MOTOR AND FUNCTIONAL ACTIVITIES OF UPPER LIMB IN POST STROKE PATIENTS"** was carried out by **THOMAS RICHARD. K, Reg. No. 271620244** of P.S.G. College of Physiotherapy, towards the partial fulfillment for the degree of **MASTER OF PHYSIOTHERAPY (Physiotherapy in Neurology),** affiliated to The Tamil Nadu Dr. M.G.R. Medical University, Chennai, under my guidance.

**Dr. R. BALAKRISHNAN, MD, DM(Neuro), DNB(Neuro).,**
Professor, Department of Neurology,
P.S.G Hospitals,
Coimbatore – 641 004.

Place: Coimbatore

Date:

# PSG COLLEGE OF PHYSIOTHERAPY

**Coimbatore**

## CERTIFICATE

This is to certify that the dissertation work entitled **"COMPARING THE EFFICACY OF TASK SPECIFIC TRAINING AND CONVENTIONAL PHYSIOTHERAPEUTIC REHABILITATION ON MOTOR AND FUNCTIONAL ACTIVITIES OF UPPER LIMB IN POST STROKE PATIENTS"** was carried out by **THOMAS RICHARD. K, Reg. No. 271620244** of P.S.G. College of Physiotherapy, Coimbatore, affiliated to The Tamil Nadu Dr. M.G.R. Medical University Chennai, under our guidance.

**Guide**
**Prof. R.MAHESH, MPT.,**
Principal
P.S.G. College of Physiotherapy
Coimbatore - 641 004.

**Co-Guide**
**Mrs. Malarvizhi, MPT.,**
Assistant Professor
P.S.G. College of Physiotherapy
Coimbatore - 641 004.

Place: Coimbatore
Date:

# ACKNOWLEDGEMENT

It is my privilege to express my deep sense of gratitude to the **GOD** for showering his blessings, who has always been my source of strength and who guides me throughout.

For the ancestors who paved the path before me upon whose shoulders I stand. I dedicate this study to **MY FAMILY** and **FRIENDS** for providing their moral support and love in each and every step of my life.

With due respect, I would like to express my immense gratitude to **Professor R. Mahesh, MPT, Principal,** PSG College of Physiotherapy, Coimbatore, for his encouragement and inspiration during the course of my study.

I feel it my duty to thank Professor **Dr. R. Balakrishnan, MD, DM(Neuro), DNB(Neuro),** Department of Neurology, PSG IMS&R Hospitals for his constant and unwavering encouragement, who rendered his invaluable experience as guidance to this project.

I also thank Professor **Dr. Ramamoorthy, MD, HOD,** Department of PMR, PSG IMS& R Hospitals for his encouragement, who rendered his invaluable experience as guidance to this project.

I am thankful to my project guides **Mr. Mahesh.R, MPT** and **Mrs. Malarvizhi, MPT** for their encouragement, inspiration and untiring efforts given throughout the study.

I am indebted to **Mr.Raja Regan, MPT** for his expertise guidance and valuable ideas without whom the study would have not been completed.

My special thanks to **Mrs V.Mahalakshmi, MPT**, Post graduate Coordinator, PSG College of physiotherapy who has moulded me in my academics activities and made my project completion easier.

I express my gratitude to **Mrs. Ashraf MPT**, **Ms. Shanmugapriya, MPT, Mr. Saravanan, MPT, Mrs. Sweety Subha, MPT, Mr. Mahendiran, MPT,** and **Mr.Nagaraj, MPT,** for their timely help.

I am grateful to **Mr. A. Parthiban**, **MPT,** for his expert guidance and constant support throughout the study.

My special thanks to **Dr. ANIL MATHEW, Ph.D, Professor,** Department of Biostatistics, PSG Institute of Medical Science and Research who gave me a helping hand in statistical method of data analysis.

I thank all the members of **Institutional Review Committee of Research,** College of Physiotherapy and Human Ethics Committee of PSG Institute of Medical Science and Research for their kind suggestions to complete the dissertation.

I also thank all the staff members of the PSG College of Physiotherapy and Department of Physiotherapy for helping me to complete this project successfully.

Finally, I thank all the patients for their kind co-operation. Without their involvement this project would have not been possible.

# ABBREVIATIONS

| | | |
|---|---|---|
| ARAT | - | Action Research Arm Test |
| MMSE | - | Mini Mental Status Examination |
| FMA-UE | - | Fugl Meyer Assessment for Upper Extremity |
| MAS | - | Modified Ashworth Scale |
| MCA | - | Middle Cerebral Artery |
| ADL | - | Activities of Daily Living |
| ANOVA | - | Analysis Of Variance |

# CONTENTS

# LIST OF ANNEXURES

# CHAPTER - I

# INTRODUCTION

Stroke is a global health problem. It is the second commonest cause of death [13] and fourth leading cause of disability worldwide (Strong 2007) [15]. Stroke is the leading cause of disability and functional impairments [15]; with 20% of survivors requiring institutional care after 3 months and 15%-30% being permanently disabled (Steinwarks 2000).In India the annual incidence of stroke is about 145 per 100,000 per year during 2003-05 and 2005-06. In developed and developing countries of the worlds. The incidence of stroke increases dramatically with age, doubling in the decade after 65 years of age. Twenty-eight percent of strokes occur in individuals younger than 65 years of age.

The greatest impact of stroke on both patients and families are the long-term disability, including impairments, limitations of activities and participation restrictions in life situations. As one of the most cause of disability, stroke imposes an economic burden in several countries.

Stroke is the most common cause of chronic disability. Of survivors, an estimated one third will be functionally dependent after 1 year experiencing difficulty with activities of daily living (ADL), ambulation, speech, and so forth. Stroke survivors represent the largest group admitted to inpatient rehabilitation hospitals. Of the many arteries supplying the brain the middle cerebral artery (MCA) is the second of the two main branches of the internal carotid artery and supplies the entire lateral aspect of the cerebral hemisphere (frontal, temporal, and parietal lobes) and sub cortical structures, including the internal capsule (posterior portion), corona radiata, globuspallidus (outer part), most of the caudate nucleus, and the putamen and middle cerebral artery most common site of occlusion in stroke [8].

Weakness (paresis) is found in 80 to 90 percent of all patients after stroke and is a major factor in disability. Patients are unable to generate the force necessary for initiating and controlling movement. The degree of weakness is related to the location and size of the brain injury and varies from a complete inability to achieve any visible contraction to measurable impairments in force production. Deficits on the contra lateral, side typically include hemi paresis.

Owing to the high incidence of MCA strokes, the UE is frequently more affected than the LE. About 20 percent of individuals with MCA strokes fail to regain any functional use of the affected UE.

The effects on the upper extremities are a major cause of functional impairment. This impairment of the upper extremity often leads to loss of independence with activities of daily living and of important occupations. Indeed, hand function is crucial for performing delicate movements in everyday life, such as eating meals and dressing. Identification of solutions for hand function disorders in stroke patients is important because they restrict everyday life activities [9].

There are many interventions that are intended to help people regain function and range of motion in their hand and arm after stroke. Motor and cognitive perceptual disability could occur in patients who have suffered brain damage from stroke, which could decrease their capacity to perform daily activities.

Limited practice of motor activities is likely to have a negative impact upon functional recovery and could prolong impatient rehabilitation because of the patient's dependency on the unaffected upper extremity for normal functions, which results in problems such as learned disuse, asymmetric postural patterns, contractures, and aggravated functional restrictions involving the affected upper extremity. To improve functions of the affected upper extremity in stroke patients, measures that maximize opportunities to use the affected upper extremity are necessary.

Recovery and Prognosis of stroke is generally fastest in the first weeks after onset, with measurable neurological and functional recovery occurring in the first month after stroke and these changes are largely due to function-induced plasticity. A functional training approach that emphasizes use of the more involved extremities and an enriched environment effectively stimulates neural reorganization of the brain[8].

Functional mobility skills are impaired following stroke and vary considerably from individual to individual. During the acute stroke phase Basic ADL skills such as feeding, bathing, dressing, and toileting are also compromised during acute stroke, with 67 to 88 percent of patients demonstrating partial or complete dependence.

Carr and Shepherd suggested task-oriented training as a treatment method to help improve deteriorated motor skills of stroke patients and their capacity to perform daily activities, and diverse functional activities properly applied to patients can help improve their actual motor skills and capacity to perform daily activities [8]. Task-oriented training refers to programs that focus on special functional tasks that unite the muscular skeletal system and nervous system and treatments that encourage active participation and focus on functional tasks rather than simple, repetitive training of normal motion patterns. Research on task-oriented training has been active lately, but application of new research results in the clinical environment is impractical because most patients are hospitalized for short periods and programs often have long application periods, which are usually longer than three weeks and also. There is no high quality evidence for any interventions that are currently routine practice, and evidence is insufficient to enable comparison of the relative effectiveness of interventions, in other words, the evidence is insufficient to show which of the interventions are the most effective for improving upper limb function.

Thus, the aim of this research is to determine the treatment effect of a short period of task-oriented training (two weeks) on upper extremity function and performance of daily activities in acute stroke patients and also majority of our daily activities require optimal function of upper limb, therefore when its function is compromised it leads to profound activity limitation in persons with stroke. This study is to investigate the potential benefits of task specific activities in post stroke patients following upper limb task specific training and also to compare the effect of task specific training and conventional physiotherapeutic rehabilitation for upper limb performance in daily activities of stroke patient and so the Task specific training helps to restore the preserved functional activities of the affected upper limb and to prevent non-use syndrome.

## 1.1 NEED FOR THE STUDY:

The majority of our daily activities require optimal function of upper limb, therefore when its function is compromised it leads to profound activity limitation in persons with stroke [2].

This study is to investigate the potential benefits of task specific activities in post stroke patients following upper limb task specific training and also to compare the effect of task specific training and conventional physiotherapeutic rehabilitation for upper limb performance in daily activities of stroke patients.

## 1.2 OBJECTIVE

1. To find impact of task specific training on motor changes and functional activities of upper limb.
2. To find the effect of conventional physiotherapeutic rehabilitation on motor changes and functional activities of upper limb.
3. To compare the effect of task specific training and conventional physiotherapeutic rehabilitation on motor and functional activities of upper limb.

## 1.3 HYPOTHESIS

- **NULL HYPOTHESIS**: There will be no significant difference after task specific training over conventional physiotherapeutic rehabilitation on motor and functional activities of upper limb.
- **ALTERNATIVE HYPOTHESIS**: There will be significant difference after task specific training over conventional physiotherapeutic rehabilitation on motor and functional activities of upper limb.

## 1.4 OPERATIONAL DEFINITION:

### ACTION RESEARCH ARM TEST (ARAT)

Scale used for measuring arm –hand function in stroke patients and also used to assess activities of daily living, coordination and dexterity of hand. ARAT is found to be one of the most valid and consistent information tests.

### FUGL MEYER ASSESSMENT FOR UPPER EXTREMITY (FMA-UE)

Stroke specific, performance based impairment index. It is designed to assess motor function, sensation and joint functioning, it is clinically used to determine disease severity, describe motor recovery and to plan and assess treatment.

# CHAPTER – II

# REVIEW OF LITERATURE

- **Kimberly J.Waddell, et al.,** conducted a study on fifteen patients to investigate the feasibility of high repetition, task specific training for individuals with upper extremity paresis and the participants received 60 minutes/day of task specific training for 4 days/week during inpatient phase. With the help of ARAT(Action Research Arm Test) and FIM(Functional Independence Measure) as additional outcome measure they concluded that engaging patients in a high repetition task specific training improved in all activity outcome measures and impairments.

- **Ching –lnhsieh, et al.,** conducted a study to find the inter and intra rated reliability of action research arm test for 50 stroke patients and found that this action research arm test is closely correlated with upper extremity motor assessment and also the study supports the value of ARAT for measuring recovery of arm hand function in stroke.

- **Gui Bin Song, et al.,** conducted a study to investigate the effects of task-oriented bilateral arm training and repetitive bilateral arm training on upper limb function and activities of daily living in forty stroke patients .The task-oriented group underwent bilateral arm training with 5 functional tasks, and the repetitive group underwent bilateral arm training with rhythmic auditory cueing for 30 minutes/day, 5 times/week, for 12 weeks. And found a significant difference in the task-oriented group showing a greater improvement in upper limb function and activities of daily living and recommend bilateral arm training as well as adding functional task training as a clinical intervention to improve upper limb function activities of daily living.

- **Jannette Blennerhassett, et al**., conducted a study to investigate whether additional practice of either upper limb or mobility tasks improved functional outcome during inpatient stroke rehabilitation in thirty stroke patients. All subjects received their usual rehabilitation and an additional session of task-related practice using a circuit class format. Independent assessors, blinded to group allocation, tested all subjects. Outcome measures used were three items of the w3r636 Taylor Hand Function Test (JTHFT), two

arm items of the Motor Assessment Scale (MAS), and three mobility measures, the Timed Up and Go Test (TUGT), Step Test, and Six Minute Walk Test (6MWT) and only the Upper Limb Group made a significant improvement on the JTHFT and MAS upper arm items. And the findings support the use of additional task-related practice during inpatient stroke rehabilitation.

- **Van Der Lee JH**, **et al**., To determine the intra- and inter rater reliability of the Action Research Arm (ARA) test and to identify less reliable test items .Intra rater reliability of the sum scores and of individual items was assessed by comparing (1) the ratings of the laboratory measurements of 20 patients with the ratings of the same measurements recorded on videotape by the original rater, and (2) the repeated ratings of videotaped measurements by the same rater. Inter rater reliability was assessed by comparing the ratings of the videotaped measurements of 2 raters. The resulting limits of agreement were compared with the MCID. Stratified sample, based on the intake ARA score, of 20 chronic stroke patients (median age, 62yr; median time since stroke onset, 3.6yr; mean intake ARA score, 29.2). Spearman's rank-order correlation coefficient (Spearman's rho); interclass correlation coefficient (ICC); mean difference and limits of agreement, based on ARA sum scores; and weighted kappa, based on individual items. All intra- and interrater Spearman's rho and ICC values were higher than .98. The mean difference between ratings was highest for the inter rater pair (.75; 95% confidence interval, .02-1.48), suggesting a small systematic difference between raters. Intra rater limits of agreement were -1.66 to 2.26; interrater limits of agreement were -2.35 to 3.85. Median weighted kappas exceeded .92. The high intra- and interrater reliability of the ARA test was confirmed, as was its ability to detect a clinically relevant difference of 5.7 points.

- **Park J, et al.,** The aim of this study was to determine the effects of task-oriented training on upper extremity muscle activation in daily activities performed by chronic stoke patients. In this research, task-oriented training was conducted by 2 chronic hemiplegic stroke patients. Task-oriented training was conducted 5 times a week, 30 minutes per day, for 2 weeks. Evaluation was conducted 3 times before and after the intervention. The Change of muscle activation in the upper extremity was measured using a BTS Free EMG 300. The subjects' root mean square values for agonistic muscles for the reaching

activity increased after the intervention. All subjects' co-coordination ratios decreased after the intervention in all movements of reaching activity. Through this research, task-oriented training was proven to be effective in improving the muscle activation of the upper extremity in chronic hemiplegic stroke patients.

- **Ju Hyung Park**, **et al.,** This study aimed to determine the effects of task-oriented training on upper extremity function and performance of daily activities in chronic stroke patients with impaired cognition. In this study, 2 chronic hemiplegic stroke patients underwent task-oriented training. The training was conducted once a day for 30 minutes, 5 times/week, for 2 weeks. The patients were evaluated 3 times before and after the task-oriented training. Changes in upper extremity function were assessed using the manual function test, and changes in the ability to carry out daily activities were assessed using the functional independence measure. The patients showed improvement in both the upper extremity function and ability to perform daily activities after task-oriented training. Task-oriented training was proven effective in improving upper extremity function and ability to perform daily activities in chronic hemiplegic stroke patients with impaired cognition.

- **Rensink M, et al.,** Conducted a paper review to provide an overview of the evidence in the literature on task-oriented training of stroke survivors and its relevance in daily nursing practice. Nurses explored other forms of rehabilitation intervention, including task-oriented rehabilitation. A range of databases was searched to identify papers addressing task-oriented training in stroke rehabilitation, including Medline, CINAHL, Embase and the Cochrane Library of systematic reviews. The selected randomized controlled trials and systematic reviews were assessed for quality. Studies of task-related training showed benefits for functional outcome compared with traditional therapies. Active use of task-oriented training with stroke survivors will lead to improvements in functional outcomes and overall health-related quality of life. Generally, task-oriented rehabilitation proved to be more effective. Many interventions are feasible for nurses and can be performed in a ward and or at home[10].

- **Camilla Biering Lundquist**, **et al.,** did a study to establish the inter-tester reliability, responsiveness, Minimal Clinically Important Difference (MCID) and concurrent validity of the FMA-UE in a population of stroke patients. Inter-rater reliability was assessed at baseline. Each patient was tested by two examiners and inter class correlation (ICC) was calculated. Responsiveness was assessed using receiver operating characteristic (ROC) curve statistics. The FMA-UE's concurrent validity with the Motor Assessment Scale was determined using Spearman's rank correlation. The study took place at Skive Neuro rehabilition, Denmark from May 2014 to February 2015 with 50 inpatients, who were in the acute to sub-acute stage of stroke and aged $>$ 18 years. The only outcome measure was FMA-UE. They found that ICC was 0.95, AUC(area under curve) was 0.87, with a sensitivity of 77%, a specificity of 89% and an MCID $\geq$ 4. Concurrent validity was high, with $r$ = 0.94–0.95. and the study provides evidence that the FMA-UE is a reliable, responsive and valid instrument for measuring upper limb impairment after stroke

# CHAPTER III

# MATERIALS AND METHODS

## 3.1 MATERIALS:

- Block wood 10 cm cube
- Block wood 7.5cm cube
- Block wood 5 cm cube
- Block wood 2.5cm wood
- Cricket ball 7.5cm
- Stone 10×2.5×1 cm
- Glass
- Tube 2.25 cm
- Tube 1×16 cm
- Washer 3.5cm diameter
- Over bolt
- Ball bearing 6mm
- Marble 1.5 cm

## 3.2 STUDY DESIGN:

Repeated Measure Study Design

## 3.3 STUDY SETTING:

Department of Neurology and Stroke Rehabilitation Centre, PSG IMS&R Hospitals, Coimbatore.

## 3.4 HUMAN PARTICIPATION PROTECTION:

The study was reviewed and approved by Institutional Human Ethics Committee, PSG IMS&R.

## 3.5 POPULATION/PARTICIPANTS:

Participants with hemi paresis from PSG IMS&R Hospitals were chosen as population for the study. A total of 21 hemi paretic participants were included in the study.

**3.6 SAMPLING:** Randomized Sampling Method.

## 3.7 INTERVENTION:

**GROUP A:** 14 patients receiving Functional Task Specific Training

**GROUP B:** 7 patients receiving Conventional Physiotherapeutic rehabilitation

## 3.8 CRITERIA FOR SAMPLE SELECTION

### 3.8.1 Inclusion Criteria:

- Hemi paretic patients with 40-65 years of age.
- MCA ischemic infarct with less than one month of onset and is a first clinically evident of stroke related training and treatment with dominant side affected.
- Fugl- Meyer upper extremity score between of 19 – 40/66 excluding H,J,J portions.[4]
- Mini mental state examination score $\geq$ 24[4]
- Modified Ashworth scale score $\leq$ 2 in all upper limb muscles[5]
- Medically stable patients.

### 3.8.2 Exclusion Criteria:

- Perceptual disorder
- Uncorrectable Visual deficits
- Patients with other neurological disorder/musculoskeletal problems.

## 3.9 STUDY DURATION:

Total duration of 8 months was adopted for this study.

## 3.10 INSTRUMENT& TOOL FOR DATA COLLECTION:

- Action Research Arm Test (ARAT)
- Fugl  Meyer Assessment For Upper Extremity(FMA-UE)

## 3.11 TECHNIQUE OF DATA COLLECTION:

Patient will be assessed for eligibility based on the inclusion and exclusion criteria. The informed consent will be obtained from the eligible patient. Group A will receive functional task specific training for two sessions per day for 5 days a week for two weeks [1] in which tasks are randomly ordered and should be repetitive and mass practiced [2] with ten 5minute work stations for each session, Group B will receive conventional physiotherapeutic rehabilitation for two sessions per day for 5 days a week for two weeks and data will be collected.

## 3.12 TECHNIQUE OF DATA ANALYSIS & INTERPRETATION:

Data collected from each patients within the same group were analyzed by using repeated measure ANOVA and between the groups with help of independent 't' test [14].

### Independent 't' test:

$$t = \frac{|\bar{x}_1 - \bar{x}_2|}{SD\sqrt{\frac{1}{n_1} + \frac{1}{n_2}}}$$

Where,

$$SD = \sqrt{\frac{(n_1 - 1)SD_1^2 + (n_2 - 1)SD_2^2}{(n_1 + n_2) - 2}}$$

$\overline{X_1}$ = Mean difference in Group A

$\overline{X_2}$ = Mean difference in Group B

SD = Combined standard deviation of Group A and Group B

$n_1$ = Number of patients in Group A

$n_2$ = Number of patients in Group B

$SD_1$ = Standard Deviation of Group A

$SD_2$ = Standard Deviation of Group B

## ANOVA(ANALYSIS OF VARIANCE)

| Source of variation | Sum of square (SS) | Degrees of Freedom (df) | Mean Square (MS) | F |
|---|---|---|---|---|
| **Treatment between the groups** | **SSB=** $\sum_{nj} (\bar{x}_j - \bar{\bar{x}})^2$ | **K-1** | **MSB=** $\frac{\text{SSB}}{\text{K-1}}$ | **F=** $\frac{\text{MSB}}{\text{MSE}}$ |
| **Error or residual within groups** | **SSE=** $\sum\sum (x - \bar{x}_j)^2$ | **N-K** | **MSE =** $\frac{\text{SSE}}{\text{N-K}}$ | |
| **Total** | **SST=** $\sum\sum (x - \bar{\bar{x}})^2$ | **N-1** | | |

X = individual observation

$\bar{X}j$ = sample mean of the j $^{th}$generation

$\bar{\bar{X}}$ = Overall sample mean

K = the number of treatments or independent comparison groups

N = total number of observations or total sample size

# CHAPTER – IV

# DATA ANALYSIS AND INTERPRETATION

Data analysis is the systemic organization and synthesis of research data and testing of research hypothesis using these data.

Interpretation is the process of making sense of the results of a study and examining the implication (Polit & Belt, 2004).

Both group stroke patients were tested with inclusion criteria and assessed with ARAT and FMA-UE and data was obtained. The mean, standard deviation and ‘f’ values were used to identify the difference within the group i.e. in task specific group as well as in conventional group with repeated measure ANOVA **(Analysis of Variance)** using SPSS version.20

The post hoc test values are used to identify the difference within each group performing task specific activities and conventional rehabilitation showing their value of significance performed by stroke subjects within each group.

The independent ‘t’ value was used to measure the difference which was laid between both the task specific and conventional physiotherapeutic group and to show the level of significance with the help of ‘t’ value.

## BASELINE DATA

### TABLE: 1

### ARAT AND FUGL MEYER ASSESSMENT FOR UPPER EXTREMITY VALUE FOR GROUP A (EXPERIMENTAL GROUP-TASK SPECIFIC ACTIVITIES) (N = 14)

| S.NO | ARAT | | | FMA-UE | | |
|---|---|---|---|---|---|---|
| | PRE | INTERMEDIATE | POST | PRE | INTERMEDIATE | POST |
| 1. | 9 | 12 | 18 | 21 | 27 | 32 |
| 2. | 33 | 36 | 42 | 38 | 42 | 47 |
| 3. | 48 | 51 | 54 | 56 | 60 | 62 |
| 4. | 42 | 48 | 51 | 47 | 56 | 60 |
| 5. | 12 | 18 | 24 | 27 | 32 | 36 |
| 6. | 18 | 27 | 33 | 32 | 36 | 42 |
| 7. | 12 | 12 | 18 | 26 | 32 | 36 |
| 8. | 21 | 24 | 23 | 35 | 36 | 42 |
| 9. | 33 | 46 | 51 | 42 | 55 | 60 |
| 10. | 42 | 46 | 51 | 46 | 55 | 60 |
| 11. | 12 | 18 | 27 | 26 | 32 | 36 |
| 12. | 30 | 33 | 33 | 40 | 42 | 46 |
| 13. | 9 | 12 | 18 | 21 | 27 | 32 |
| 14. | 18 | 21 | 24 | 32 | 34 | 35 |

**TABLE: 2**

**ARAT AND FUGL MEYER ASSESSMENT FOR UPPER EXTREMITY VALUE FOR GROUP B (CONTROL GROUP-CONVENTIONAL REHABILITATION) (N = 7)**

| S.NO | ARAT | | | FMA-UE | | |
|---|---|---|---|---|---|---|
| | PRE | INTERMEDIATE | POST | PRE | INTERMEDIATE | POST |
| 1. | 18 | 27 | 27 | 32 | 36 | 42 |
| 2. | 48 | 51 | 54 | 56 | 60 | 66 |
| 3. | 12 | 18 | 27 | 27 | 32 | 36 |
| 4 | 42 | 42 | 45 | 39 | 42 | 47 |
| 5. | 24 | 27 | 33 | 36 | 42 | 46 |
| 6. | 15 | 15 | 18 | 28 | 33 | 42 |
| 7. | 12 | 12 | 18 | 27 | 32 | 36 |

## TABLE 3

## DEMOGRAPHIC DATA OF STROKE PARTICIPANTS

| CHARACTERISTICS | VALUES |
|---|---|
| **NUMBER OF PATIENTS** | 21 |
| **AGE (YEARS)** | 50.6(MEAN) |
| **POST STROKE DURATION** | >1 MONTH |
| **GENDER(MALE/FEMALE)** | 19(90%)/2(10%) |
| **HEMI PARETIC SIDE(RIGHT/LEFT)** | 20(95.5%)/1(4.56%) |
| **FUGL MEYER ASSESSMENT FOR UPPER EXTREMITY** | 34.96(MEAN) |

## TABLE 4

## MEAN, STANDARD DEVIATION AND 'f' VALUE OF ACTION RESEARCH ARM TEST FOR TASK SPECIFIC TRAINING STROKE SUBJECTS.

| TEST | MEAN | STANDARD DEVIATION | "f" VALUE | P VALUE |
|---|---|---|---|---|
| PRE TEST | 24.21 | 13.54 | 66.28 | <.05 |
| INTERMEDIATE TEST | 28.86 | 14.38 | | |
| POST TEST | 33.36 | 13.77 | | |

Based on **Table 3**, shows stroke subjects in the study with the percentage of the gender, age (mean) hemi paretic side percentage and mean of Fugl Meyer Assessment Score of Upper Limb was found to be 34.96.**Table 4** shows mean of 24.21, 28.86 and 33.36 for ARAT in experimental group and showing a "f" value of 66.28 which shows a greater significant difference of p value < 0.05.

## TABLE 5

### MEAN, STANDARD DEVIATION AND "f" VALUE OF FUGL MEYER ASSESSMENT –UPPER EXTREMITY FOR TASK SPECIFIC TRAINING STROKE SUBJECTS.

| TEST | MEAN | STANDARD DEVIATION | F VALUE | P VALUE |
|---|---|---|---|---|
| PRE TEST | 34.93 | 10.48 | 77.12 | <.05 |
| INTERMEDIATE TEST | 40.43 | 11.46 | | |
| POST TEST | 44.71 | 11.32 | | |

**Table 3** shows mean of 34.93, 40.43and44.71 for FMA-UE in experimental group and showing a "f" value of 77.12 which shows the greater significant difference of p value < 0.05

## TABLE 6

**MEAN, STANDARD DEVIATION AND "f" VALUE OF ACTION RESEARCH ARM TEST FOR CONVENTIONAL PHYSIOTHERAPEUTIC REHABILITATION STROKE SUBJECTS.**

| TEST | MEAN | STANDARD DEVIATION | F VALUE | P VALUE |
|---|---|---|---|---|
| PRE TEST | 24.43 | 14.74 | 14.76 | <.05 |
| INTERMEDIATE TEST | 27.43 | 14.43 | | |
| POST TEST | 31.71 | 13.51 | | |

**Table 4** shows mean of 24.43,27.43and 31.71 for ARAT in control group and showing a "f" value of 14.76 which shows the least significant difference of p value < 0.05.

## TABLE-7

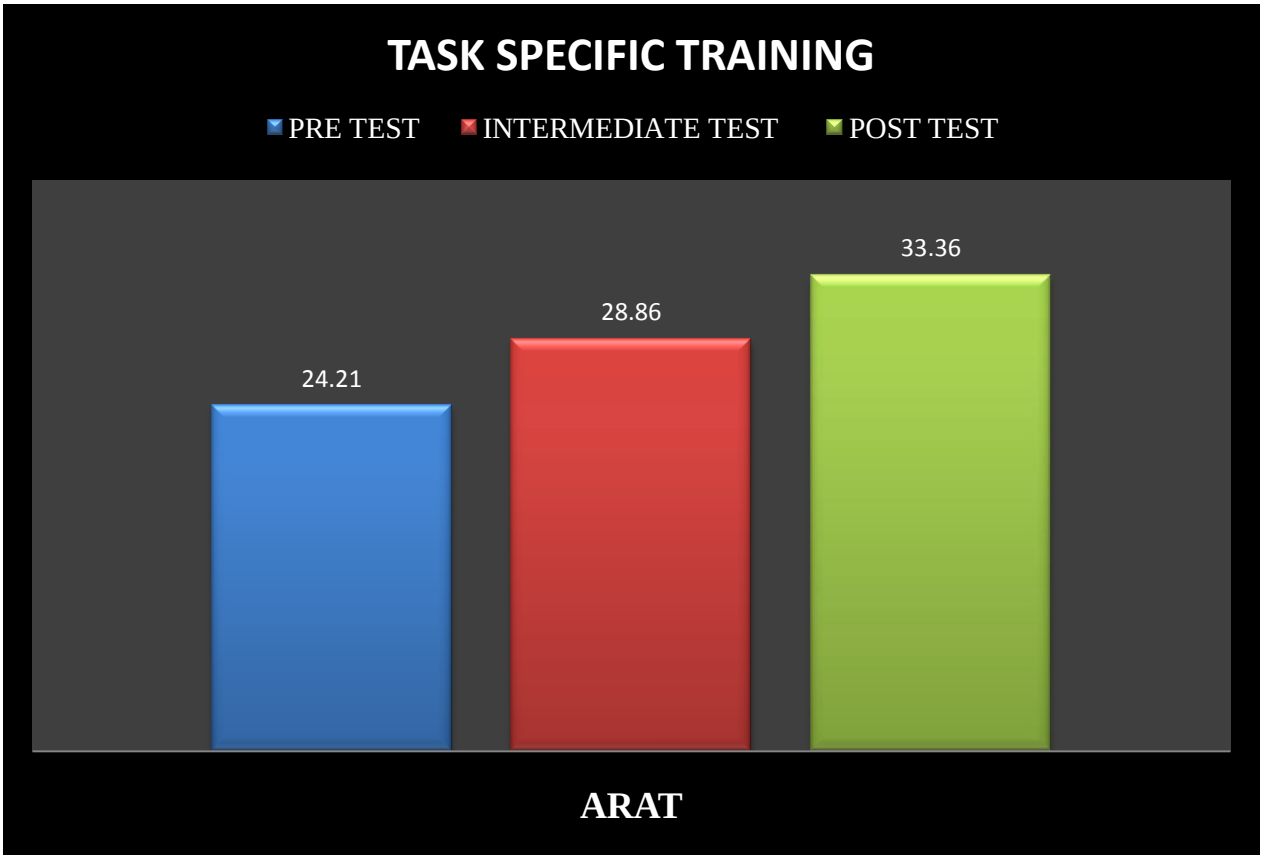
## MEAN, STANDARD DEVIATION AND "f" VALUE OF FUGL MEYER ASSESSMENT –UPPER EXTREMITY FOR CONVENTIONAL PHYSIOTHERAPEUTIC REHABILITATION STROKE SUBJECTS

| TEST | MEAN | STANDARD DEVIATION | F VALUE | P VALUE |
|---|---|---|---|---|
| PRE TEST | 35 | 10.36 | 133.15 | <.05 |
| INTERMEDIATE TEST | 39.57 | 9.98 | | |
| POST TEST | 44.71 | 10.21 | | |

**Table-5** shows mean of 35, 39.57and 44.71 for FMA-UE in control group and showing a "f" value of 133.15 which shows the greatest significant difference of p value < 0.05.

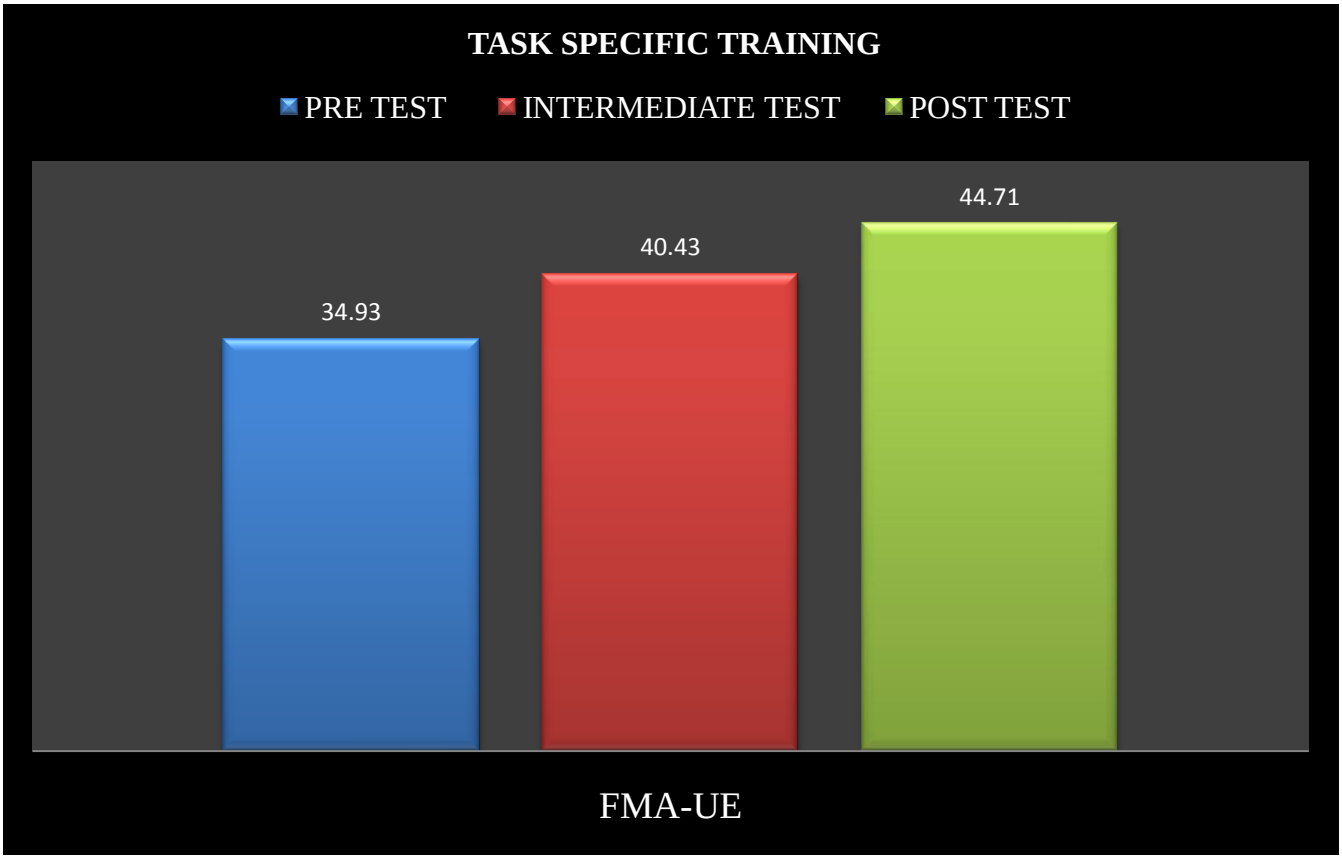
## GRAPH 1

## GRAPHICAL REPRESENTATION OF PRE, INTERMEDIATE AND POST TEST MEAN VALUE OF ACTION RESEARCH ARM TEST IN TASK SPECIFIC TRAINING GROUP OF STROKE PATIENTS.



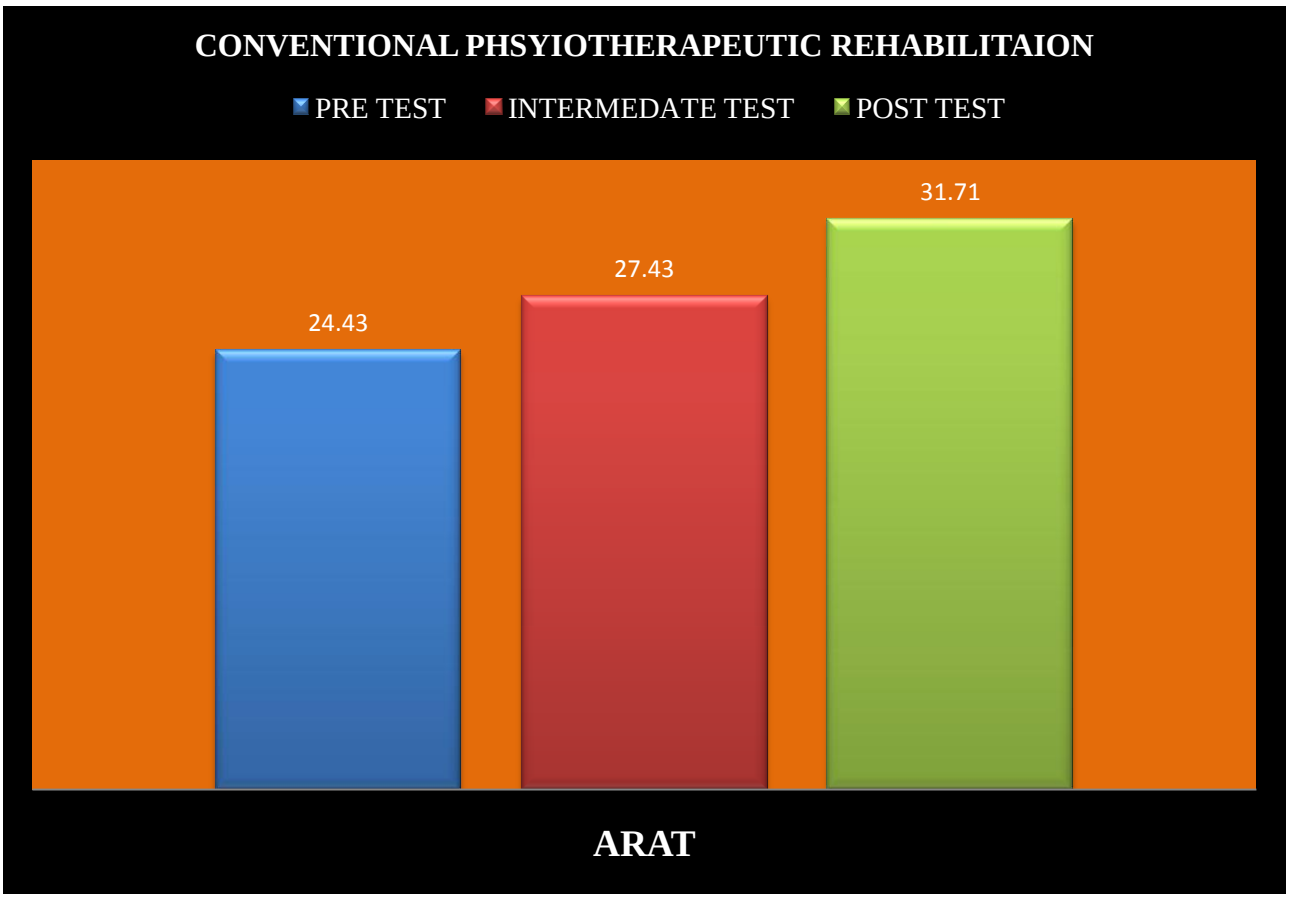
## GRAPH 2

## GRAPHICAL REPRESENTATION OF PRE, INTERMEDIATE AND POST TEST MEAN VALUE OF FUGL MEYER ASSESSMENT –UPPER EXTREMITY IN TASK SPECIFIC TRAINING GROUP OF STROKE PATIENTS



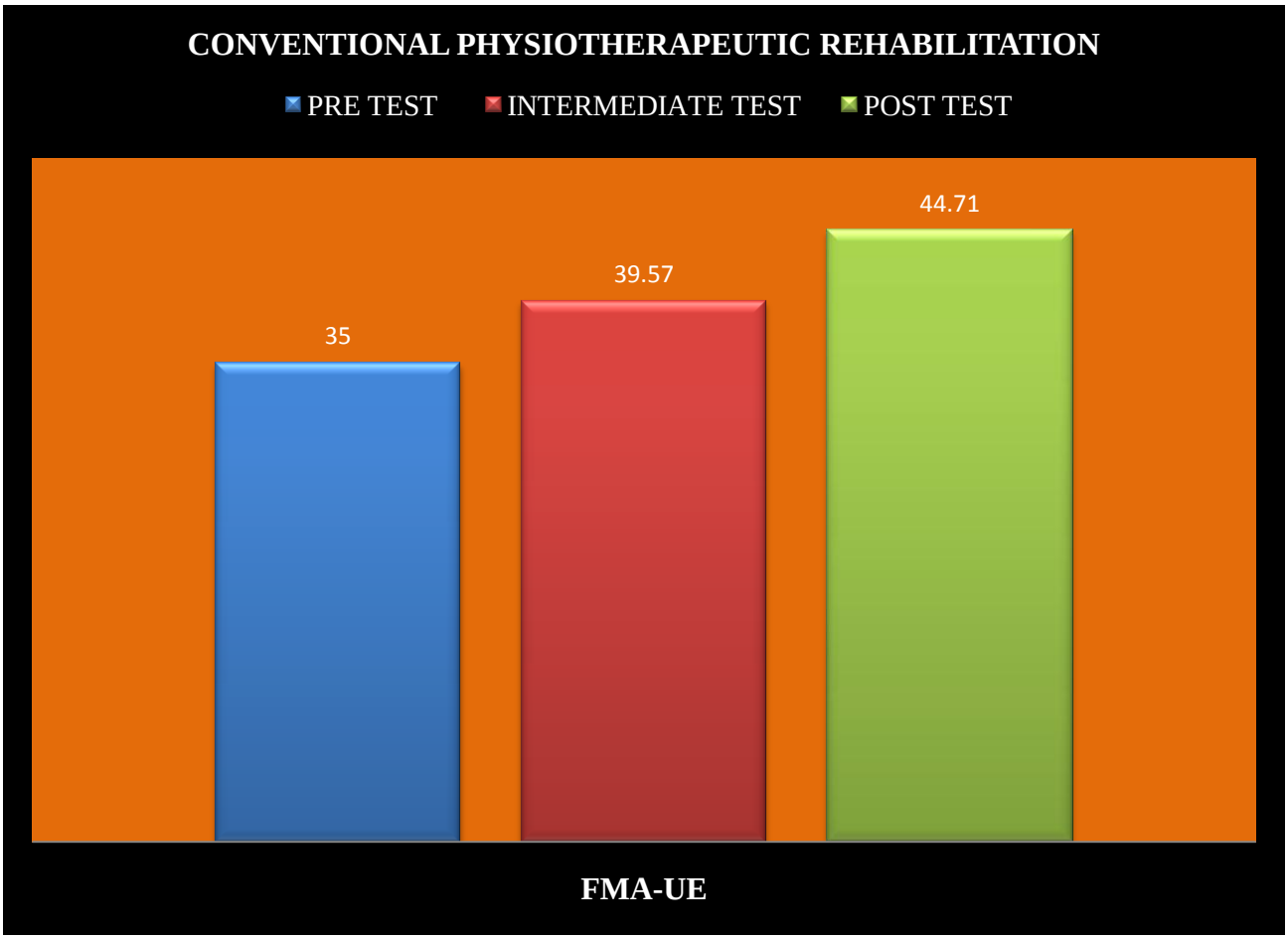
## GRAPH 3

## GRAPHICAL REPRESENTATION OF PRE, INTERMEDIATE AND POST TEST MEAN VALUE OF ACTION RESEARCH ARM TEST IN CONVENTIONAL PHYSIOTHERAPEUTIC REHABILITATION GROUP OF STROKE PATIENTS



## GRAPH 4

## GRAPHICAL REPRESENTATION OF PRE, INTERMEDIATE AND POST TEST MEAN VALUE OF FUGL MEYER ASSESSMENT –UPPER EXTREMITY IN CONVENTIONAL PHYSIOTHERAPEUTIC REHABILITATION GROUP OF STROKE PATIENTS



## TABLE 8

## MEAN, MEAN DIFFERENCE AND "t" VALUE OF ARAT FOR TASK SPECIFIC AND CONVENTIONAL GROUPS

| GROUPS | | N | MEAN | MEAN DIFFERENCE | "t" VALUE | "p" VALUE |
|---|---|---|---|---|---|---|
| PRE TEST | A | 14 | 24.21 | -.214 | 0.33 | .984 |
| | B | 7 | 24.43 | -.214 | | |
| INTERMEDIATE TEST | A | 14 | 28.86 | 1.429 | .214 | .650 |
| | B | 7 | 27.43 | 1.429 | | |
| POST TEST | A | 14 | 33.36 | 1.643 | .259 | .70 |
| | B | 7 | 31.71 | 1.643 | | |

**TABLE 8** shows the mean, mean difference of pre, intermediate and post test values of ARAT for both the experimental and the control group showing a "t" value of .033,.214 and .259 and a P value >0.05 which shows that there exists no significant difference between the groups.

## TABLE 9

## MEAN, MEAN DIFFERENCE AND "t" VALUE OF FMA-UE FOR TASK SPECIFIC AND CONVENTIONAL GROUPS

| GROUPS | | N | MEAN | MEAN DIFFERENCE | "t" VALUE | 'p" VALUE |
|---|---|---|---|---|---|---|
| PRE TEST | A | 14 | 34.93 | .071 | .015 | .701 |
| | B | 7 | 35 | .071 | | |
| INTERMEDIATE TEST | A | 14 | 40.43 | .857 | .168 | .383 |
| | B | 7 | 39.57 | .857 | | |
| POST TEST | A | 14 | 44.71 | .286 | .056 | .351 |
| | B | 7 | 45 | .286 | | |

**TABLE 9** shows the mean, mean difference of pre, intermediate and post-test values of FMA-UE for both the experimental and the control group showing a "t" value of .0.15, .168 and .286 and a P value >0.05 which shows that there exists no significant difference between the groups**.**

## TABLE: 10

## PAIRWISE COMPARISONS BETWEEN PRE, INTERMITTENT AND POST TEST VALUES OF ARAT IN TASK SPECIFIC TRAINING GROUP

| ARAT | GROUP A | Mean Difference | Standard error | Significance |
|---|---|---|---|---|
| **PRE** | **INT** | 4.643 | .862 | .000 |
| **PRE** | **POST** | 9.143 | 1.226 | .000 |
| **INT** | **POST** | 4.5 | .709 | .000 |

**Based on Table 8** Post hoc tests using the Least Significant Difference method revealed that testing ARAT under three conditions elicited a mean difference and is significant at the .05 level in group A (Task Specific Activities).

## TABLE: 11

## PAIRWISE COMPARISONS BETWEEN PRE, INTERMITTENT AND POST TEST VALUES OF FMA-UE IN TASK SPECIFIC TRAINING GROUP

| FAM- UE | GROUP A | Mean Difference | Standard error | Significance |
|---|---|---|---|---|
| **PRE** | **INT** | 5.5 | .856 | .000 |
| **PRE** | **POST** | 9.786 | 1.001 | .000 |
| **INT** | **POST** | 4.286 | .370 | .000 |

**Based on Table 9** Post hoc tests using the Least Significant Difference method revealed that testing FMA-UE under three conditions elicited a mean difference and is significant at the .05 level in group A (Task Specific Activities).

## TABLE: 12

## PAIRWISE COMPARISONS BETWEEN PRE, INTERMITTENT AND POST TEST VALUES OF ARAT IN CONVENTIONAL PHYSIOTHERAPEUTIC GROUP

| ARAT GROUP B | Mean Difference | Standard error | Significance |
|---|---|---|---|
| **PRE INT** | 3 | 1.309 | .062 |
| **PRE POST** | 7.286 | 1.584 | .004 |
| **INT POST** | 4.286 | 1.107 | .008 |

**Based on Table 10** Post hoc tests using the Least Significant Difference method revealed that testing ARAT under three conditions elicited a mean difference and is significant at the .05 level in group B (Conventional Physiotherapeutic Rehabilitation).

## TABLE: 13

## PAIRWISE COMPARISONS BETWEEN PRE, INTERMITTENT AND POST TEST VALUES OF FMA-UE IN CONVENTIONAL PHYSIOTHERAPEUTIC REHABILITATION GROUP

| FMA- UE | GROUP-B | Mean Difference | Standard error | Significance |
|---|---|---|---|---|
| **PRE** | **INT** | 4.571 | .369 | .000 |
| **PRE** | **POST** | 10 | .724 | .000 |
| **INT** | **POST** | 5.429 | .685 | .000 |

**Based on Table 11**Post hoc tests using the Least Significant Difference method revealed that testing ARAT under three conditions elicited a mean difference and is significant at the .05 level in group B (Conventional Physiotherapeutic Rehabilitation).

# CHAPTER V

# RESULTS AND DISCUSSION

A total of 21 participants including 19 male subjects and 2 female subjects was successfully categorized in two groups and was involved in the study and was recruited in two group's experimental group (**TASK SPECIFIC TRAINING**) and control group (**CONVENTIONAL PHYSIOTHERAPEUTIC REHABILITATION**) using computer generated random sampling method.

The Group A experimental group was given task specific activities for 14 stroke patients in which there were 12 men and 2 women, the mean values of Action Research Arm Test (ARAT) and Fugl Meyer Assessment for Upper Extremity (FMA-UE) was assessed in three intervals having a four day interval between each tests. The mean value of group A ARAT was 24.21, 28.86and 33.36 and FMA-UE was 34.93, 40.43and 44.71 for pre intermediate and post-test respectively.

The same procedure was followed for group B which involved 7 post stroke patients in which the patients where male all the showing a mean value of 24.43, 27.43and 31.71 for ARAT and 34.93, 40.43 and 44.71 for FMA-UE respectively.

Table 4, 5, 6, and 7 shows the mean values of both the groups and the mean differences of the groups and shows a difference which lies within the group.

Further, Analysing with the help of repeated measure ANOVA showed there lies a great difference within the Group A having an f value 61.28 for group a ARAT and 77.12 for FMA-UE showing a greater significance which lies within the groups showing a p value $< .05$ which are shown in table 4 and 5.

Within Group B, analysing using repeated measure ANOVA the f value is 14.76 and 133.15 for ARAT and FMA-UE respectively, which shows a greater significance which lies within the groups showing a p value $< .05$ seen in the table 6 and 7.

Values of within group analysis showed that both the groups task specific group and conventional physiotherapeutic group showed linear rise is the values but the conventional group shows that there is a large rise in Fugl Meyer - UE component. This may be due to the conventional group involves large use of multi joint and muscle activity's than the task specific group which mainly involves arm – hand function. So comparing the components in both groups the FMA-UE Contains components such as reflex activity, volitional movement within, mixing and with little or no synergy also having components such as normal reflex activity, wrist components, hand components and coordination and speed components and that of ARAT are pinch, grasp, grip and gross movements.

Table 8 and 9 shows the between group analysis which was made using a independent t test and showed a t value of -.033 , .214 and .26 for ARAT and a mean difference of .214, 1.429 and 1.643 for pre test, intermediate test and post test respectively. The result showed that there laid no difference between both the experimental and control group showing a larger p value ($p>0.05$).

Post hoc tests using the Least Significant Difference method revealed that testing ARAT under three conditions elicited a mean difference and are significant at the .05 level in both the task specific group and conventional rehabilitation group which are shown in the table 10 and 11. But comparing the table 10 and 11 the values show a significance of 0.05 for group A ARAT and group B ARAT shows values of least significant difference.

Post hoc tests using the Least Significant Difference method revealed that testing FMA-UE under three conditions elicited a mean difference and are significant at the .05 level in both the task specific group and conventional rehabilitation group which are shown in the table 11 and 13. Comparing the table 11 and 13 the values show a significance of 0.05 for group A ARAT and group B showing a value of least significant difference.

A study conducted on long standing stroke patients who underwent dose related task specific activities in which the ARAT was the main outcome measure used and the dosage was 3,200, 6,400, 9,600, or individualized maximum (IM) repetitions, during 1-hour sessions, 4 days/week for 8 weeks. They found that treatment effects were small. There was no evidence of a dose-response effect of task-specific training on functional capacity in people with long-

standing upper-limb paresis post stroke with values of 0.40 ± 0.15, 0.31 ± 0.16, and 0.66 ± 0.14, respectively ($p < 0.05$). The slope of the 6,400 group was smaller (-0.05 ± 0.15) and significantly different from the 3,200 and IM groups ($p < 0.001$)[19] but the current study shows that task specific activities mean value of ARAT was 24.21, 28.86 and 33.36 which shows greater significance of $p<0.05$ this may be due to the population is in acute post stroke inpatient phase which is because recovery and Prognosis of stroke is generally fastest in the first weeks after onset, with measurable neurological and functional recovery occurring in the first month after stroke and these changes are largely due to function-induced plasticity and the largest changes in cortical maps have been seen in the first few months after stroke, which is also when the steepest recovery curves are seen[21].

Other study shows that with 103 sub acute patients with stroke were randomized to receive meaningful task-specific training (MTST, n=51) or standard training (n=52). MTST participants performed functional unilateral and/or bilateral tasks and individualized meaningful tasks for 60 minutes, 4-5 times/ week for 4 weeks. Measures were taken at baseline, 4 weeks (post-treatment) and 8 weeks (follow-up) and included the Fugl-Meyer Assessment (FMA) upper extremity the Action Research Arm Test (ARAT), Graded Wolf Motor Function Test (GWMFT) time and quality of movement scores; and motor activity using the Motor Activity Log (MAL). There were significant between-group differences in change scores at 8 weeks on all measures, in favor of MTST compared to standard training ($p\leq0.001$)[20] but in the current study the findings helps us to conclude that there was no difference between the groups with p value > 0.05 but there laid significant difference within the group having p value<0.05. This may be due to small sample population in the current study and comparing to the above study and also due to less follow up assessment compared to the other study.

So, finding the values it is visible that both the task specific and conventional group shows a significant difference within the groups but between the groups there laid no significant difference in between the task specific and conventional group. This result also supports the findings of previous studies that have demonstrated using task-oriented assessment tools such as the FMA (Fugl-Meyer Assessment) and ARAT (Action Research Arm Test) that task-oriented training has a positive influence on enhancement of upper limb function in acute stroke patients.

## LIMITATIONS OF THE STUDY:

- This research includes the fact that it is difficult to generalize the results due to the small number of subjects.
- The possible influences of variables outside the treatment could not be excluded as subjects were treated at different times.
- The study inclusion is very direct that the acute stroke patients have much difficulty being included for the study.
- The study duration for acute stroke patients was too large for their inpatient rehabilitation.

## SUGGESTIONS FOR FUTURE RESEARCH:

- The kinematic and qualitative aspects of the exercises as well as the recovery in terms of neurophysiology should be evaluated in future studies.
- Research using task specific training as adjunct to conventional rehabilitation can be studied in future for acute stroke patients in both inpatient and out-patient phases of rehabilitation.
- The study in the future can be largely populated and use of ARAT as an assessment tool for upper limb functions is necessary.

# CHAPTER VI

# SUMMARY AND CONCLUSION

The results of the study conclude that task specific training and conventional physiotherapeutic rehabilitation will help to improve in developing functional activities as well as motor recovery of upper limb after stroke in acute stage.

But there is no difference showing that task specific group is more effective than conventional group in improving functional and motor activities of upper limb.

Hence, it is recommended that an adjunct of task specific activities as well as conventional physiotherapeutic training will help in improving both motor and functional activities of upper limb.

Also, it is recommended to make use of ARAT as a most common measurement tool for arm and hand function in stroke rehabilitation.

This study concludes that **“There is no significant difference after task specific training over conventional physiotherapeutic rehabilitation on motor and functional activities of upper limb”** in acute post stroke patients.

# BIBILOGRAPHY


1. Juhyung park et al**., Effects of task oriented training on upper extremity function and performance of daily activities by chronic stroke patients** J.Phys .Ther .Sci. 27:2657-2659,20152

2. K. Hariohm , R. Vasanthan**., Book Of Stroke Rehabilitation : a functional activity based approach .**pg no 137 – 206

3. Ching – linhiseh et al **.,Inter –Rater Reliability And Validity Of The Action Research Arm Test In Stroke Patients age and ageing** 1998 ;27 :107 -113

4. Mary Ellen Stoyko et al.,**Comparison of Bilateral and Unilateral Trainingfor Upper Extremity Hemiparesis in Stroke. Neurorehabilitation and Neural Repair** Volume 23 Number 9November/December 2009 945-953

5. Gui Bin Song, MS, PT, **The effects of task-oriented versus repetitive bilateral arm training on upper limb function and activities of daily living in stroke patients.** J. Phys. Ther. Sci. 27: 1353–1355, 2015

6. JannetteBlennerhassett and Wayne Dite ., **Additional task- related practice improves mobility and upper limb function early after stroke** Australian Journal Of Phys 2004 vol .50:219-224

7. Kimberly J.Waddell et al., **Feasibility of high repetition, task specific training for individuals with upper extremity paresis** The American Journal Of Occupational Therapy July/August 2014, Vol 68,No 4

8. Carr JH, Shepherd RB: **Stroke rehabilitation**. London: Butterworth-Helenemann, 2003.

9. Yoo C, Park J: **Impact of task-oriented training on hand function and activities of daily living after stroke**. J PhysTherSci, 2015, 27: 2529–2531.

10. Rensink M, Schuurmans M, Lindeman E, et al.: **Task-oriented training in rehabilitation after stroke: systematic review**. J AdvNurs, 2009, 65: 737–754.

11. Van der Lee et al. **Improving the action research arm test: A uni dimensional hierarchical scale**. Clinical Rehabilitation 2002; 16:646-53.

12. Michelle Mcdonnell**. Action research arm test**: Australian Journal Of Physiotherapy 2008. Vol.54

13. **Umphred's neurological rehabilitation**.6 th edition chapter-23: page-711

14. Elizebeth Domholdt: **Biostatistics and research methodology**

15. World stroke organization:2015(**WHO**)

16. Catherine E. Lang et al. **Measurement of Upper-Extremity Function Early After Stroke: Properties of the Action Research Arm Test Archives of Physical Medicine Rehabilitation** Vol-87, December 2006 page 1605-1610

17. Johanna H. Van Der Lee et al. **The responsiveness of the action research arm test and the fugl-meyer assessment scale in chronic stroke patients**.Rehab Med 2001; 33: 110–113.

18. Camilla Biering Lundquist et al**., Fugl Meyer Assessment of Upper Extremity: reliability, responsiveness and validity.** Journal of disability and rehabilitation volume 39,2017.

19. Lang CEet al.,**Dose response of task-specific upper limb training in people at least 6 months poststroke: A phase II, single-blind, randomized, and controlledtrial.**2016 American Neurological Association.

20. Arya, K.N., Verma, R., Garg, R.K., Sharma, V.P., Agarwal, M., &Aggarwal, G.G. (2012). **Meaningful task-specific training (MTST) for stroke rehabilitation: A randomized controlled trial.** Canadian Partnership for Stroke Recovery.

21. Heidi Johansen-Berg **Correlation between motor improvements and altered fMRI activity after rehabilitative therapy** Brain (2002), 125, 273 .,2742

# ANNEXURE I

**PSG Institute of Medical Sciences & Research**
**Institutional Human Ethics Committee**
Recognized by The Strategic Initiative for Developing Capacity in Ethical Review (SIDCER)
POST BOX NO. 1674, PEELAMEDU, COIMBATORE 641 004, TAMIL NADU, INDIA
Phone : 91 422 - 2598822, 2570170, Fax : 91 422 - 2594400, Email : ihec@psgimsr.ac.in

Mr K Thomas Richard
I year MPT
**Guide/s:** Mr R Mahesh / Mrs S Malarvizhi
PSG College of Physiotherapy
Coimbatore

**Ref:** Project No.17/150

**Date:** August 9, 2017,

Dear Mr Thomas Richard,

Institutional Human Ethics Committee, PSG IMS&R reviewed and discussed your application dated 24.04.2017 to conduct the research study entitled "*Comparing the efficacy of task specific training and conventional physiotherapeutic rehabilitation on motor functional activities of upper limb in post-stroke patients*" during the IHEC meeting held on 02.06.2017.

The following documents were reviewed and approved:

1. Project submission form
2. Study protocol (Version 2 dated 09.08.2017)
3. Informed consent forms (Version 2 dated 09.08.2017)
4. Data collection tool (Version 2 dated 09.08.2017
5. Permission letter from concerned Heads of Department
6. Current CVs of Principal investigator, Co-investigator
7. Budget

The following members of the Institutional Human Ethics Committee (IHEC) were present at the meeting held on 02.06.2017 at IHEC Secretariat, PSG IMS & R between 10.00 am and 11.00 am:

| Sl. No. | Name of the Member of IHEC | Qualification | Area of Expertise | Gender | Affiliation to the Institution Yes/No | Present at the meeting Yes/No |
|---|---|---|---|---|---|---|
| 1 | Mr R Nandakumar (Chairperson, IHEC) | BA., BL | Legal Expert | Male | No | Yes |
| 2 | Dr. S. Bhuvaneshwari (Member-Secretary, IHEC) | MD | Clinical Pharmacology | Female | Yes | Yes |
| 3 | Dr S Shanthakumari | MD | Pathology, Ethicist | Female | Yes | Yes |
| 4 | Dr Sudha Ramalingam | MD | Epidemiologist, Ethicist Alt. member-Secretary | Female | Yes | Yes |
| 5 | Dr D Vijaya | M Sc., Ph D | Basic Medical Sciences (Biochemistry) | Female | Yes | Yes |

The study is approved in its presented form. The decision was arrived at through consensus. Neither PI nor any of proposed study team members were present during the decision making of the IHEC. The IHEC functions in accordance with the ICH-GCP/ICMR/Schedule Y guidelines. The approval is valid until one year from the date of sanction. You may make a written request for renewal / extension of the validity, along with the submission of status report as decided by the IHEC.

# PSG Institute of Medical Sciences & Research
## Institutional Human Ethics Committee

Recognized by The Strategic Initiative for Developing Capacity in Ethical Review (SIDCER)
POST BOX NO. 1674, PEELAMEDU, COIMBATORE 641 004, TAMIL NADU, INDIA
Phone : 91 422 - 2598822, 2570170, Fax : 91 422 - 2594400, Email : ihec@psgimsr.ac.in


Following points must be noted:

1. IHEC should be informed of the date of initiation of the study
2. Status report of the study should be submitted to the IHEC every 12 months
3. PI and other investigators should co-operate fully with IHEC, who will monitor the trial from time to time
4. At the time of PI's retirement/intention to leave the institute, study responsibility should be transferred to a colleague after obtaining clearance from HOD, Status report, including accounts details should be submitted to IHEC and extramural sponsors
5. In case of any new information or any SAE, which could affect any study, must be informed to IHEC and sponsors. The PI should report SAEs occurred for IHEC approved studies within 7 days of the occurrence of the SAE. If the SAE is 'Death', the IHEC Secretariat will receive the SAE reporting form within 24 hours of the occurrence
6. In the event of any protocol amendments, IHEC must be informed and the amendments should be highlighted in clear terms as follows:
   a. The exact alteration/amendment should be specified and indicated where the amendment occurred in the original project. (Page no. Clause no. etc.)
   b. Alteration in the budgetary status should be clearly indicated and the revised budget form should be submitted
   c. If the amendments require a change in the consent form, the copy of revised Consent Form should be submitted to Ethics Committee for approval
   d. If the amendment demands a re-look at the toxicity or side effects to patients, the same should be documented
   e. If there are any amendments in the trial design, these must be incorporated in the protocol, and other study documents. These revised documents should be submitted for approval of the IHEC and only then can they be implemented
   f. Any deviation-Violation/waiver in the protocol must be informed to the IHEC within the stipulated period for review
7. Final report along with summary of findings and presentations/publications if any on closure of the study should be submitted to IHEC

Kindly note this approval is subject to ratification in the forthcoming full board review meeting of the IHEC.

Thanking You,

Yours Sincerely,

SECRETARY
PSG IMS&R
COIMBATORE-641004

Dr S Bhuvaneshwari
Member - Secretary
Institutional Human Ethics Committee

# ANNEXURE II

## NEUROLOGICAL ASSESSMENT FORM FOR STROKE

Medical Diagnosis:

Referred By:

Assessed by:

**SUBJECTIVE EXAMINATION**

**DEMOGRAPHIC DATA**

Name: OP No: IP No:

Age: Sex: Date:

Address:

Growth and Development:

Chief Complaints:

History of present illness:

Past history of current condition:

Past medical and surgical History:

Personal History:

Family History:

Occupational History:

History of living environment:

Social History:

Previous functional status:

**Pain History**

Side :

Site :

Onset :

Duration :

Type :

Aggravating factors :

Relieving factors :

Severity :

**Vital Signs**

Temperature :

Blood pressure :

Heart rate :

Respiratory rate :

**OBJECTIVE EXAMINATION**

**ON OBSERVATION**

Built :

Posture :

Attitude of limbs :

Muscle wasting :

Pattern of movement :

Gait :

Pressure sore :

Edema :

Tropical changes :

External appliances :

**On Palpation**

Tone :

Edema :

Tenderness :

Warmth :

## 1. HIGHER MENTAL FUNCTIONS

**Level of consciousness**

**Orientation**

Person :

Place :

Time :

**Memory**

Immediate :

Recent :

Remote :

**Attention :**

**Communication :**

**Emotional status :**

## 2. HIGHER CORTICAL FUNCTIONS

**Cognition:**

Fund of knowledge :

Calculation :

Proverb interpretation :

**Perception:**

Body scheme/ body image disorders:

Spatial relation disorders :

Agnosias :

Apraxia :

**3. CRANIAL NERVES**

**4. SENSORY SYSTEM**

**5. MOTOR SYSTEM**

**Muscle Tone:**

| Upper limb | Lower limb |
|---|---|
| | |

**Muscle Power:**

**Voluntary motor control:**

| | Right | Left |
|---|---|---|
| Upper limb | | |
| Lower limb | | |

**Muscle girth:**

| AREA | Rt(cms) | Lt(cms) |
|---|---|---|
| Arm | | |
| Forearm | | |
| Thigh | | |
| Calf | | |

**Movement time:**

**Associated Reactions:**

**6. REFLEXES:**

**Superficial:**

Abdominal :

Plantar :

**Deep:**

| JERKS | Rt | Lt |
|---|---|---|
| Biceps | | |
| Brachio – radialis | | |
| Triceps | | |
| Knee | | |
| Ankle | | |

**Tonic Postural Reflexes:**

**7. INVOLUNTARY MOVEMENTS:**

**8. CO-ORDINATION**

**Non equilibrium test :**

**Equilibrium test :**

**9. BALANCE:**

| Balance | Static | Dynamic |
|---|---|---|
| Sitting | | |
| Standing | | |

Centre of Gravity Control :

Balance Reactions :

Motor Strategies :

Sensory Strategies :

**10. GAIT:**

Bio mechanical deviations:

**11. HAND FUNCTIONS:**

Reaching :

Grasping :

Releasing :

**12. ASSISTIVE DEVICES:**

**13. OTHER SYSTEMS:**

Integumentary system :

Pressure sore :

Respiratory system :

Secretion :

Pattern of breathing :

Deformity :

**Cardiovascular system:**

Deep vein thrombosis :

Edema :

**Musculoskeletal system:**

Contracture :

Subluxation :

Stiffness :

Heterotopic ossification :

Osteoporosis :

**Bladder and bowel function :**

**Gastro intestinal system :**

**Sexual function :**

**Autonomic system:**

Vasomotor :

Pseudomotor :

Tropic changes :

Postural hypotension:

Reflex sympathetic dystrophy:

**14. FUNCTIONAL STATUS:**

**Bed mobility:**

**Transfer:**

**PHYSICAL THERAPY DIAGNOSIS:**

**Direct impairments :**

**Indirect impairments :**

**Composite impairments :**

**Functional limitations :**

**PHYSICAL THERAPY MANAGEMENT:**

# ANNEXURE – III

# PERFORMA

Patient name: IP No:

Age: Contact No:

Sex: Date of Assessment:

Occupation:

Address:

Handedness:

Diagnosis:

Post stroke duration:

Vitals : BP: mmHg HR: Bpm RR: bpm Temperature: deg C

Modified Ashworth Scale:

Mini Mental State Examination:

## OUTCOME MEASUREMENTS SCORING

| S.NO | OUTCOME MEASURE | SCORES | | |
|---|---|---|---|---|
| | | PRE TEST | INTERMEDIATE TEST | POST TEST |
| 1. | ACTION RESEARCH ARM TEST | | | |
| 2. | FUGL –MYER ASSESSMENT FOR UPPER LIMB/66 | | | |

DATE: SIGNATURE

PLACE:

# ANNEXURE –IV

## INFORMED CONSENT FOR PARTICIPATION IN RESEARCH STUDY

## PATIENT INFORMATION FORM

**PSG Institute of Medical Science and Research, Coimbatore**
**Institutional Human Ethics Committee**
**INFORMED CONSENT FORMAT FOR RESEARCH PROJECTS**

I Thomas Richard.K am carrying out a study on the topic: **"Comparing the efficacy of Task Specific Training and Conventional Physiotherapeutic Rehabilitation on functional activities of upper limb in post stroke patients",** as part of my research project being carried out under the aegis of the Departments of: Neurology, Physical Medicine and Rehabilitation.
My research guide is: Prof. R.Mahesh, MPT (Cardio Respiratory).

**The justification for this study is:**

Motor and cognitive perceptual disability could occur in patients who have suffered brain damage from stroke, which could decrease their capacity to perform daily activities.

Researchers suggest task specific training as a treatment method to help improve deteriorated motor skills of stroke patients and diverse functional activities applied to the patient can help to improve motor skills and capacity to perform daily activities, And also task specific training helps to restore the preserved functional activities of the affected upper limb and to prevent non-use syndrome in later stages. Limited practice of motor activities is likely to have a negative impact upon functional recovery and could prolong impatient rehabilitation because of the patient's dependency on the unaffected upper extremity aggravating functional restrictions involving the affected upper extremity.

Therefore, to improve functions of the affected upper extremity in stroke patients, measures that maximize opportunities to use the affected upper extremity are necessary.

**The objectives of this study:**

1. To find impact of task specific training on motor changes and functional activities of upper limb.
2. To find the effect of conventional physiotherapeutic rehabilitation on motor changes and functional activities of upper limb.
3. To compare the effect of task specific training and conventional physiotherapeutic rehabilitation on functional activities of upper limb.

**Sample size**: 50

**Study volunteers / participants** are post stroke patients, 40-65 years of age.

**Location**: Department of Neurology, Department of PMR, PSG IMS&R Hospitals.

We request you to kindly co-operate with us in this study. We propose collect background information and other relevant details related to this study. We will be carrying out:

**Initial interview:** 45 minutes.

**Blood sample collection**: Specify quantity of blood being drawn: _____ml. **NOT APPLICABLE**

No. of times it will be collected: _____. **NOT APPLICABLE**

Whether blood sample collection is part of routine procedure or for research (study) purpose:

1. Routine procedure 2. Research purpose **NOT APPLICABLE**

Specify **purpose**, discomfort likely to be felt and side effects, if any: _____**NOT APPLICABLE** _____

Whether blood sample collected will be stored after study period: Yes / No, it will be destroyed**NOT APPLICABLE**

Whether blood sample collected will be sold: Yes / No **NOT APPLICABLE**

Whether blood sample collected will be shared with persons from another institution: Yes / No**NOT APPLICABLE**

**Medication** given, if any, duration, side effects, purpose, benefits: **NOT APPLICABLE**

Whether medication given is part of routine procedure: Yes / No (If not, state reasons for giving this medication) **NOT APPLICABLE**

Whether alternatives are available for medication given: Yes / No (If not, state reasons for giving this particular medication) **NOT APPLICABLE**

**Final interview:** 45 minutes.

Data collected will be stored for a period of **5 years**. We **will not use** the data as part of another study.

**Benefits from this study**:

- The results of study will influence the importance of task specific training on functional activites of upper limb as a part of rehabilitation in post stroke patients.
- The study will improve functions of the affected upper limb in stroke patients and restore the preserved functional activities of the affected upper limb.

**Risks involved by participating in this study**: There are no possible risks or discomforts will be experienced during this study.

How the **results** will be used: The data collected during the study will be used without revealing your identity. Your identity will be confidential even if the results of the study are published.

If you are uncomfortable in answering any of our questions during the course of the interview, **you have the right to withdraw from the interview / study at any time.** You have the freedom to withdraw from the study at any point of time. Kindly be assured that your refusal to participate or withdrawal at any stage, if you so decide, will not result in any form of compromise or discrimination in the services offered nor would it attract any penalty. You will continue to have access to the regular services offered to a patient. You will **NOT** be paid any remuneration for the time you spend with us for this interview / study. The information provided by you will be kept in strict confidence. Under no circumstances shall we reveal the identity of the respondent or their families to anyone. The information that we collect shall be used for approved research purposes only. You will be informed about any significant new findings - including adverse events, if any, – whether directly related to you

or to other participants of this study, developed during the course of this research which may relate to your willingness to continue participation.

**Consent:** The above information regarding the study, has been read by me/ read to me, and has been explained to me by the investigator/s. Having understood the same, I hereby give my consent to them to interview me. I am affixing my signature / left thumb impression to indicate my consent and willingness to participate in this study (i.e., willingly abide by the project requirements).

Signature / Left thumb impression of the Study Volunteer / Legal Representative:

Signature of the Interviewer with date: Witness:

Contact number of PI: 9043022238

Contact number of Ethics Committee Office: During Office hours: 0422 4345818

பூ. சா. கோ மருத்துவக் கல்லூரி மற்றும் ஆராய்ச்சி நிறுவனம், கோவை

மனித நெறிமுறைக் குழு

**ஒப்புதல் படிவம்**

தேதி:

**தாமஸ் ரிச்சர்டு .கு,** ஆகிய நான் பூ. சா. கோ மருத்துவக் கல்லூரியின் / மருத்துவமனையின் நரம்பியல் மற்றும் புனர்வாழ்வு துறையின் கீழ், **"ஒப்பிட்டுத் திறன் முலமாக பணிக்குறிப்பிட்ட பயிற்சிகள் மற்றும் வழக்கமான இயன்முறை சார்ந்த புனர்வாழ்வு சிகிச்சைகளைப் பயன்படுத்தி பக்கவாதத்தால் கை பாதிக்கப்பட்ட நோயாளிகளுக்கு இயக்கம் மற்றும் அன்றாட செயல்திறனைக் கண்டறிதல்"** என்ற தலைப்பில் ஆய்வு மேற்கொள்ள உள்ளேன்.

**என் ஆய்வு வழிகாட்டி:** பேராசிரியர். திரு மகேஷ், முதல்வர், பூ. சா. கோ இயன்முறை மருத்துவக் கல்லூரி

**ஆய்வு மேற்கொள்வதற்கான அடிப்படை:**

மூளைக்கு செல்லும் இரத்த குழாய்களில் அடைப்பு மற்றும் இரத்த குழாய் வெடிப்பின் காரணமாக மூளையில் சிறுபகுதிகள் பாதிக்கப்பட்டு பக்கவாதம் ஏறப்டுகிறது. இதனால் உடம்பில் சில இயக்கம் மற்றும் அறிவாற்றல் புலனுணர்வு இயலாமை, அன்றாட செயல்திறன் ஆற்றல் குறைதல் ஏற்படுகிறது. எனவே பக்கவாதத்தால் பாதிக்கப்பட்ட நோயாளிகளின் கையின் செயல்பாடுகளை மேம்படுத்த தேவையான அளவீடுகளைப் பயன்படுத்தி, பாதிக்கப்பட்ட உச்சநிலையை குறைக்க, வாய்ப்புகளை அதிகரிக்க வேண்டும்.

**ஆய்வின் நோக்கம்:**

1. பணிக்குறிப்பிட்ட பயிற்சிகள் பயன்படுத்தி பக்கவாதத்தால் கை பாதிக்கப்பட்ட நோயாளிகளுக்கு இயக்கம் மற்றும் அன்றாட செயல்களை அதிகரித்தல்.
2. வழக்கமான இயன்முறை சார்ந்த புனர்வாழ்வு சிகிச்சைகளைப் பயன்படுத்தி பக்கவாதத்தால் கை பாதிக்கப்பட்ட நோயாளிகளுக்கு இயக்கம் மற்றும் அன்றாட செயல்களை அதிகரித்தல்.
3. ஒப்பீட்டுத்திறன் மூலமாக பணிக்குறிப்பிட்ட பயிற்சிகள் மற்றும் வழக்கமான இயன்முறை சார்ந்த புனர்வாழ்வு சிகிச்சைகளைப் பயன்படுத்தி பக்கவாதத்தால் கை பாதிக்கப்பட்ட நோயாளிகளுக்கு இயக்கம் மற்றும் அன்றாட செயல்களை அதிகரித்தல்.

**ஆய்வில் பங்கு பெறும் நபர்களின் எண்ணிக்கை:** 50

**ஆய்வில் பங்கு பெறுவோர் மற்றும் வயது:** 40 - 65 வயதுக்குட்பட்ட, பிந்தைய பக்கவாதத்தால் கை பாதிக்கப்பட்ட நோயாளிகள்.

**ஆய்வு மேற்கொள்ளும் இடம்:** நரம்பியல் துறை, புனர்வாழ்வு மருத்துவ துறை, பூ. சா. கோ. மருத்துவமனை, கோயம்புத்தூர்.

இந்த ஆய்வில் எங்களுடன் ஒத்துழைக்குமாறு கேட்டுக்கொள்கிறோம். நாங்கள் சில தகவல்களை இந்த ஆய்விற்காக சேகரிக்க உள்ளோம்.

**ஆய்வு செய்யப்படும் முறை:**

இந்த ஆய்வின் மொத்த கால அளவு 8 மாதங்கள். இந்த ஆய்வில் பிந்தைய பக்கவாதத்தால் கை பாதிக்கப்பட்டு இயக்கம் மற்றும் செயல்திறன் குறைவாக உள்ள நோயாளிகளை 25 நபர்கள் கொண்ட இருக்குழுக்களாக பிரித்துக்கொள்வேன். பின்னர் முதல் வருகையின் போது இயக்கம் மற்றும் செயல்திறனின் நடவடிக்கையை ஆய்வு பிரிவான சோதனைப் படிவத்தைக் கொண்டு அளவீடுகள் குறித்துக் கொள்ளப்படும். இந்த ஆய்வில் ஈடுபடும் முதல் குழுவிற்கு பணிக் குறிப்பிட்ட பயிற்சியும், இரண்டாவது குழுவிற்கு வழக்கமான புனர்வாழ்வு சிகிச்சையும் அளிக்கப்படும். இச்சிகிச்சையானது வாரத்திற்கு 5 முறை வீதம் இரண்டு வாரத்திற்கு அளிக்கப்படும். பின்னர் முதலில் எடுக்கப்படும் அளவீடுகள் இறுதியில் எடுக்கப்பட்ட அளவீடுகளுடன் ஒப்பிட்டு ஆராயப்படும்.

**முதன்மை நேர்காணல்:** 45 நிமிடங்கள்

**முடிவு நேர்காணல்:** 45 நிமிடங்கள்

இந்த ஆய்வில் கிடைக்கும் தகவல்கள் **5 வருடங்கள்** பாதுகாக்கப்படும். இந்த தகவல்கள் வேறு ஆய்விற்குப் பயன்படுத்தப் பட மாட்டாது.

**சுகாதாரக் கல்வி:** அமர்வுகள்: வாரத்திற்கு 5 முறை வீதம் 2 வாரம், ஒரு அமர்வுக்கான நேரம்: 45 நிமிடங்கள்

**மருத்துவ பரிசோதனைகள்: உண்டு**

**இரத்த மாதிரி சேகரிப்பு: இல்லை**

**இரத்த மாதிரி எடுப்பது வழக்கமான சிகிச்சைக்காகவோ அல்லது இந்த ஆய்விற்காகவோ:**
**பொருந்தாது**

**இதனால் ஏற்படக் கூடிய அசௌகரியங்கள் / பக்க விளைவுகள்:** இதனால் எந்த அசௌகரியமோ, பக்க விளைவுகளோ ஏற்படாது. **பொருந்தாது**

இரத்த மாதிரிகள் ஆய்விற்குப் பின் பாதுகாத்து வைக்கப்படுமா? ஆம் / இல்லை, அழிக்கப்படும்: **பொருந்தாது**

சேகரிக்கப்பட்ட இரத்தம் விற்கப்படுமா? ஆம் / இல்லை **பொருந்தாது**

சேகரிக்கப்பட்ட இரத்தம் வேறு நிறுவனத்துடன் பகிர்ந்து கொள்ளப்படுமா? ஆம் / இல்லை: **பொருந்தாது**

**மருந்துகள் ஏதேனும் கொடுக்கப்படவிருந்தால் அவை பற்றிய விவரம்** (கொடுக்கப்படும் காரணம், காலம், பக்க விளைவுகள், பயன்கள்): **பொருந்தாது**

**மருந்துகள் கொடுக்கப்படுவது வழக்கமான சிகிச்சை முறையா?:** ஆம் / இல்லை (இல்லை என்றால் கொடுக்கப்படும் காரணம்) **பொருந்தாது**

**கொடுக்கப்படும் மருந்துகளுக்கு மாற்று உள்ளதா?:** ஆம் / இல்லை (ஆம் என்றால் இந்த குறிப்பிட்ட மருந்து கொடுக்கப்படும் காரணம்) **பொருந்தாது**

**ஆய்வில் பங்குபெறுவதால் ஏற்படும் பலன்கள்:**

- பக்கவாதத்தால் பாதிக்கப்பட்ட கையின் செயல்திறன் அதிகரிக்கும் என எதிர்பார்க்கப்படுகிறது.
- பக்கவாதத்தால் பாதிக்கப்பட்ட கையின் இயக்கம் அதிகரிக்கும் என எதிர்பார்க்கப்படுகிறது.
- பக்கவாதத்தால் பாதிக்கப்பட்ட கையின் செயல்பாட்டு நடவடிக்கைகள் பாதுகாக்கப்படும் என எதிர்பார்க்கப்படுகிறது.

**ஆய்வினால் பங்கேற்பதால் ஏற்படும் அசௌகரியங்கள் / பக்க விளைவுகள்:** இந்த ஆய்வினால் தங்களுக்கு எந்த விதமான அபாயங்களும் அசௌகரியங்களும் ஏற்படாது.

**ஆய்வின் முடிவுகள் எந்த முறையில் பயன்படுத்தப்படும்?**

இந்த ஆய்வின் மூலம் கிடைக்கும் தகவல்கள் தங்களின் புகைப்படத்துடன் தங்களின் அடையாளம் அறியாவண்ணம் அகநிலை அறிக்கை (Internal report), கலந்தாய்வுகள் (Conference) அறிவியல் சார்ந்த ஆராய்ச்சிப் பத்திரிக்கைகளில் (Journals) வெளியிடப்படும். இதற்கு தங்களின் அனுமதி கோருகிறேன்.

இந்த ஆய்வின் கேள்விகளுக்கு பதிலளிப்பதோ, இரத்த மாதிரிகள் அல்லது திசு மாதிரிகள் எடுப்பதிலோ உங்களுக்கு ஏதேனும் அசௌகரியங்கள் இருந்தால், எந்த நேரத்தில் வேண்டுமானாலும் ஆய்விலிருந்து விலகிக்கொள்ளும் உரிமை உங்களுக்கு உண்டு. ஆய்விலிருந்து விலகிக்கொள்வதால் உங்களுக்கு அளிக்கப்படும் சிகிச்சை முறையில் எந்த வித பாதிப்பும் இருக்காது என்று உங்களுக்கு உறுதியளிக்கிறோம். மருத்துவ மனையில் நோயாளிகளுக்கு அளிக்கப்படும் சேவைகளை நீங்கள் தொடர்ந்து பெறலாம். இந்த ஆய்வில் பங்கேற்க ஒப்புக்கொள்ளுவதால் வேறு எந்த விதமான கூடுதலான பலனும் உங்களுக்குக் கிடைக்காது. நீங்கள் அளிக்கும் தகவல்கள் இரகசியமாக வைக்கப்படும். ஆய்வில் பங்கேற்பவர்கள் பற்றியோ அவர்கள் குடும்பத்தைப் பற்றியோ எந்தத் தகவலும் எக்காரணம் கொண்டும் வெளியிடப்படாது என்று உறுதியளிக்கிறோம். நீங்கள் அளிக்கும் தகவல்கள் / இரத்த மாதிரிகள் / திசு மாதிரிகள் அங்கீகரிக்கப்பட்ட ஆய்விற்கு மட்டுமே பயன்படுத்தப்படும். இந்த ஆய்வு நடைபெறும் காலத்தில் குறிப்பிடத்தகுந்த புதிய கண்டுபிடிப்புகள் அல்லது பக்க விளைவுகள் ஏதும் ஏற்பட்டால் உங்களுக்குத் தெரிவிக்கப்படும். இதனால் ஆய்வில் தொடர்ந்து பங்கு பெறுவது பற்றிய உங்கள் நிலைப்பாட்டை நீங்கள் தெரிவிக்க ஏதுவாகும்.

**ஆய்வுக்குட்படுபவரின் ஒப்புதல்:** இந்த ஆய்வைப் பற்றிய மேற்கூறிய தகவல்களை நான் படித்து அறிந்து கொண்டேன் / ஆய்வாளர் படிக்கக் கேட்டுத் தெரிந்து கொண்டேன். ஆய்வினைப் பற்றி நன்றாகப் புரிந்து கொண்டு இந்த ஆய்வில் பங்கு பெற ஒப்புக்கொள்கிறேன். இந்த ஆய்வில்

பங்கேற்பதற்கான எனது ஒப்புதலை கீழே கையொப்பமிட்டு, கை ரேகை பதித்து நான் தெரிவித்துக் கொள்கிறேன்.

பங்கேற்பாளரின் பெயர், முகவரி:

பங்கேற்பாளரின் கையொப்பம் / கை ரேகை / சட்டப்பூர்வ பிரதிநிதியின் கையொப்பம்:

தேதி :

ஆய்வாளரின் கையொப்பம்:
தேதி :

ஆய்வாளரின் தொலைபேசி எண்: 9043022238
மனித நெறிமுறைக் குழு அலுவலகத்தின் தொலைபேசி எண்: 0422-4345818

# ANNEXURE – V

# ASSESSMENT TOOLS

## Action research arm test

**ACTION**

**Patient Name: _____**

**RESEARCH Rater Name: _____**

**ARM TEST Date: _____**

**INSTRUCTIONS**

There are four subtests: Grasp, Grip, Pinch, Gross Movement. Items in each are ordered so that:

• if the subject passes the first, no more need to be administered and he scores top marks for that subtest;

• If the subject fails the first and fails the second, he scores zero, and again no more tests need to be performed in that subtest;

• Otherwise he needs to complete all tasks within the subtest

**ACTIVITY SCORE**

**Grasp**

1. Block, wood, 10 cm cube (If score = 3, total = 18 and to Grip) _____ Pick up a 10 cm block

2. Block, wood, 2.5 cm cube (If score = 0, total = 0 and go to Grip) _____ Pick up 2.5 cm block

3. Block, wood, 5 cm cube _____

4. Block, wood, 7.5 cm cube _____

5. Ball (Cricket), 7.5 cm diameter _____

6. Stone 10 x 2.5 x 1 cm _____

Coefficient of reproducibility = 0.98Coefficient of scalability = 0.94

**Grip**

1. Pour water from glass to glass (If score = 3, total = 12, and go to Pinch) _____

2. Tube 2.25 cm (If score = 0, total = 0 and go to Pinch) _____

3. Tube 1 x 16 cm _____

4. Washer (3.5 cm diameter) over bolt _____

Coefficient of reproducibility = 0.99 Coefficient of scalability = 0.98

**Pinch**

1. Ball bearing, 6 mm, 3rd finger and thumb (If score = 3, total = 18 and go to Grossmt)

_____

2. Marble, 1.5 cm, index finger and thumb (If score = 0, total = 0 and go to Grossmt)

_____

3. Ball bearing 2nd finger and thumb _____

4. Ball bearing 1st finger and thumb _____

5. Marble 3rd finger and thumb _____

6. Marble 2nd finger and thumb _____

Coefficient of reproducibility = 0.99 Coefficient of scalability = 0.98

Grossmt (Gross Movement)

1. Place hand behind head (If score = 3, total = 9 and finish) _____

2. (If score = 0, total = 0 and finish _____

3. Place hand on top of head _____

4. Hand to mouth _____

## FUGL-MEYERASSESSMENTUPPER EXTREMITY(FMA-UE)

**Date:**

| **A.UPPER EXTREMITY**,sittingposition | | | | |
|---|---|---|---|---|
| **I.Reflex activity** | | | **none** | **canbe elicited** |
| **Flexors**:bicepsandfingerflexors | | | 0 | 2 |
| **Extensors**:triceps | | | 0 | 2 |
| | | Subtotall(max4) | | |
| **II.Volitionalmovementwithinsynergies,**withoutgravitationalhelp | | | **none** | **partia** | **full** |
| **Flexorsynergy:**Handfrom contralateralkneetoipsilateralear. From extensorsynergy(shoulder adduction/internalrotation,elbow extension,forearmpronation)toflexor synergy(shoulderabduction/external | Shoulder | retraction | 0 | 1 | 2 |
| | | elevation | 0 | 1 | 2 |
| | | abduction(90°) | 0 | 1 | 2 |
| | | | 0 | 1 | 2 |
| | | externalrotati | 0 | 1 | 2 |
| | Shoulder adduction/internalrotation | | 0 | 1 | 2 |
| | | | 0 | 1 | 2 |
| | Elbow | extension | 0 | 1 | 2 |
| | | SubtotalII(max18) | | | |
| **III.Volitionalmovementmixing synergies,**withoutcompensation | | | **none** | **partia** | **full** |
| **Handtolumbarspine** | cannotbeperformed,hand infrontofSIAS | | 0 | | |
| | handbehindof SIAS(withoutcompensation) | | | 1 | |
| | handto lumbarspine(withoutcompensation) | | | | 2 |
| **Shoulderflexion0°-90°** elbowat 0° pronation-supination0° | immediateabductionorelbowflexion | | 0 | | |
| | abductionorelbowflexionduringmovement | | | 1 | |
| | | | | | 2 |
| **Pronation-supination** elbowat 90° shoulderat 0° | nopronation/supination,startingpositionimpossible | | 0 | | |
| | limitedpronation/supination,maintainsposi | | | 1 | |
| | | | | | 2 |
| | | SubtotalIII (max6) | | | |
| **IV.Volitionalmovementwith littleorno synergy** | | | **none** | **partia** | **full** |
| **Shoulderabduction0-90°** elbowat 0° | immediatesupinationorelbowflexion | | 0 | | |
| | supinationorelbowflexionduringmovement | | | 1 | |
| | | | | | 2 |
| **Shoulderflexion90°-180°** elbowat 0° | immediateabductionorelbowflexion | | 0 | | |
| | abductionorelbowflexionduringmovement completeflexion,maintains0° in | | | 1 | |
| | | | | | 2 |
| **Pronation/supination** elbowat 0° shoulderat 30°- | nopronation/supination,startingpositionimpossible | | 0 | | |
| | limitedpronation/supination,maintainsextens | | | 1 | |
| | | | | | 2 |
| | | SubtotalIV(max6) | | | |
| **V.Normalreflexactivity**evaluatedonlyiffullscoreof6pointsachievedon partIV | | | | | |
| biceps,triceps, fingerflexors | 0 pointsonpartIVor2of 3reflexesmarkedlyhyperactive | | 0 | | |
| | 1reflexmarkedlyhyperactiveorat | | | 1 | |
| | | | | | 2 |
| | | SubtotalV(max2) | | | |
| | | **Total A**(max36) | | | |

| **B. WRIST**supportmaybeprovidedattheelbowto takeorholdtheposition,no supportat | | **none** | **partial** | **Full** |
|---|---|---|---|---|
| **Stabilityat15°dorsiflexion** elbowat 90° forearmpronated | lessthan15°activedorsiflexion dorsiflexion15°,noresistanceis taken | 0 | 1 | 2 |
| **Repeateddorsifexion/volarflexion** elbowat | cannotperformvolitionally limitedactiverangeofmotion fullactiverangeof motion smoothly | 0 | 1 | 2 |
| **Stabilityat15°dorsiflexion** elbowat 0°, forearmpronated | lessthan15°activedorsiflexion dorsiflexion15°,noresistanceis taken | 0 | 1 | 2 |
| **Repeateddorsifexion/volarflexion** elbowat 0°, | cannotperformvolitionally limitedactiverangeofmotion fullactiverangeof motion smoothly | 0 | 1 | 2 |
| **Circumduction** | cannotperformvolitionally jerkymovementor incomplete completeandsmoothcircumdu | 0 | 1 | 2 |

| **C. HAND**supportmaybeprovidedat theelbowtokeep90°flexion,nosupportat the | | **none** | **partial** | **Full** |
|---|---|---|---|---|
| **Massflexion** fromfullactiveorpassiveextension | | 0 | 1 | 2 |
| **Massextension** fromfullactiveorpassiveflexion | | 0 | 1 | 2 |
| **GRASP** | | | | |
| **A– flexioninPIPandDIP** (digitsII-V) **extensioninMCPII-V** | cannotbe performed canholdpositionbutweak maintainspositionagainstresistance | 0 | 1 | 2 |
| **B–thumbadduction** 1-stCMC,MCP,IPat 0°,scrapofpaper | cannotbeperformed canholdpaperbutnotagainstt ug canholdpaperagainsta tug | 0 | 1 | 2 |
| **C- opposition**pulpaof thethumb againstthepulpaof 2-ndfinger, pencil,tugupward | cannotbeperformed canholdpencilbutnotagainstt ug canholdpencilagainsta | 0 | 1 | 2 |
| **D–cylindergrip** cylindershapedobject(smallcan) tugupward,oppositionindigitsIandII | cannotbeperformed canholdcylinderbutnotagainstt ug canholdcylinderagainstatug | 0 | 1 | 2 |
| **E–sphericalgrip** fingersin abduction/flexion,thumb | cannotbeperformed canholdballbutnotagainsttu g canholdballagainsta tug | 0 | 1 | 2 |

| **D.COORDINATION/SPEED**afteronetrialwithbotharms,blind-folded, tip of | | **Marked** | **slight** | **none** |
|---|---|---|---|---|
| **Tremor** | | 0 | 1 | 2 |
| **Dysmetria** | pronouncedorunsystematic slightandsystemat ic nodysmetria | 0 | 1 | 2 |
| | | **> 5s** | **2- 5s** | **<1s** |
| **Time** | morethan5secondsslowerthanunaffectedsid e 2-5secondsslowerthanunaffectedside | 0 | 1 | 2 |

**TOTAL – (66 max)**

# ABSTRACT

## COMPARING THE EFFICACY OF TASK SPECIFIC TRAINING AND CONVENTIONAL PHYSIOTHERAPEUTIC REHABILITATION ON FUNCTIONAL ACTIVITIES OF UPPER LIMB IN POST STROKE PATIENTS

**BACKGROUND AND PURPOSE OF THE STUDY:** The aim of this research is to determine the treatment effect of a short period of task-oriented training (two weeks) on upper extremity function and performance of daily activities in acute stroke patients and also to verify whether the task specific training helps to restore the preserved functional activities of the affected upper limb and to prevent non-use syndrome.

And the purpose of the study is to investigate the potential benefits of task specific activities in post stroke patients following upper limb task specific training and also to compare the effect of task specific training and conventional physiotherapeutic rehabilitation on motor and functional activities of upper limb performance in daily activities of stroke patients.

**STUDY DESIGN:** Repeated Measure Study Design**.**

**STUDY SETTING:** Department of Neurology and Stroke Rehabilitation Center, PSG IMS& R hospitals, Coimbatore.

**PARTICIPANTS:** 21hemiparetic patients.

**INTERVENTION:**
**Group A:** 14 patients receiving Functional Task Specific Training
**Group B:** 7 patients receiving Conventional Physiotherapeutic rehabilitation

**STUDY PROCEDURE:** Patient will be assessed for eligibility based on the inclusion and exclusion criteria and the informed consent will be obtained. Group A received two sessions training per day for 5 days a week for two weeks [1] with ten 5minute work stations per session, Group B received conventional physiotherapeutic rehabilitation for two sessions per day for 5 days a week for two weeks and then the data was collected. The measurement tool used were Action Research Arm Test (ARAT) and Fugl Meyer Assessment for Upper Extremity (FMA-UE)

**RESULTS:** Analyzing the data between Group A and B there is a significant difference within the groups with f value of 66.28, 77.12 for Group A ARAT and FMA-UE respectively and 14.76 and 133.15 for Group B ARAT and FMA-UE respectively, showing a significant difference of $p<0.05$. Between group analyses shows that there is no difference laid by Group A Experimental Group and Group B Control Group.

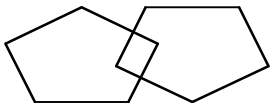
**CONCLUSION:** There is no effect of task specific training over conventional physiotherapeutic rehabilitation on motor and functional activities of upper limb in acute post stroke patients

**Keywords:** Action Research Arm Test, Fugl Meyer, Upper Extremity, task specific training

# Mini-Mental State Examination (MMSE)

Patient's Name: _____ Date: _____

***Instructions: Score one point for each correct response within each question or activity.***

| Maximum Score | Patient's Score | Questions |
|---|---|---|
| 5 | | "What is the year? Season? Date? Day? Month?" |
| 5 | | "Where are we now? State? County? Town/city? Hospital? Floor?" |
| 3 | | The examiner names three unrelated objects clearly and slowly, then the instructor asks the patient to name all three of them. The patient's response is used for scoring. The examiner repeats them until patient learns all of them, if possible. |
| 5 | | "I would like you to count backward from 100 by sevens." (93, 86, 79, 72, 65, …)<br>Alternative: "Spell WORLD backwards." (D-L-R-O-W) |
| 3 | | "Earlier I told you the names of three things. Can you tell me what those were?" |
| 2 | | Show the patient two simple objects, such as a wristwatch and a pencil, and ask the patient to name them. |
| 1 | | "Repeat the phrase: 'No ifs, ands, or buts.'" |
| 3 | | "Take the paper in your right hand, fold it in half, and put it on the floor." (The examiner gives the patient a piece of blank paper.) |
| 1 | | "Please read this and do what it says." (Written instruction is "Close your eyes.") |
| 1 | | "Make up and write a sentence about anything." (This sentence must contain a noun and a verb.) |
| 1 | | "Please copy this picture." (The examiner gives the patient a blank piece of paper and asks him/her to draw the symbol below. All 10 angles must be present and two must intersect.)<br>  |
| 30 | | TOTAL |

## ***Interpretation of the MMSE:***

| Method | Score | Interpretation |
|---|---|---|
| Single Cutoff | <24 | Abnormal |
| Range | <21 | Increased odds of dementia |
| | >25 | Decreased odds of dementia |
| Education | 21 | Abnormal for 8th grade education |
| | <23 | Abnormal for high school education |
| | <24 | Abnormal for college education |
| Severity | 24-30 | No cognitive impairment |
| | 18-23 | Mild cognitive impairment |
| | 0-17 | Severe cognitive impairment |

## ***Interpretation of MMSE Scores:***

| Score | Degree of Impairment | Formal Psychometric Assessment | Day-to-Day Functioning |
|---|---|---|---|
| 25-30 | Questionably significant | If clinical signs of cognitive impairment are present, formal assessment of cognition may be valuable. | May have clinically significant but mild deficits. Likely to affect only most demanding activities of daily living. |
| 20-25 | Mild | Formal assessment may be helpful to better determine pattern and extent of deficits. | Significant effect. May require some supervision, support and assistance. |
| 10-20 | Moderate | Formal assessment may be helpful if there are specific clinical indications. | Clear impairment. May require 24-hour supervision. |
| 0-10 | Severe | Patient not likely to be testable. | Marked impairment. Likely to require 24-hour supervision and assistance with ADL. |

## ***Source:***


- Folstein MF, Folstein SE, McHugh PR: "Mini-mental state: A practical method for grading the cognitive state of patients for the clinician." *J Psychiatr Res* 1975;12:189-198.

# ANNEXURE – VI

## TREATMENT PROTOCOL

## GROUP A

### Task Specific activities

Reaching for an object

Lift an empty glass

Opening and Closing Bottles

Moving Pegs

Stacking Cups

Using Spoon and Taking It Near To Mouth

Counting Changes (Coins)

Combing Hair

Wiping Upper Body and Folding Towels

Stacking Books and Newspapers

**GROUP B**

1.Streching

2. Strengthening

3. Weight Bearing Exercises